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The Present Situation Regarding the Adequacy of Medical Care in Canada*

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MAY I, first of all, express my appreciation of the honour done me in inviting me to contribute to this program and in the company of such distinguished authorities? The invitation was accompanied by a letter which intimated that the speaker was not limited in the scope of his remarks, implying either a spirit of confidence or of hopelessness on the part of the program committee.

I could make my paper very brief by stating that we do not know what is the present situation in Canada as regards the adequacy of medical care. Such a statement would be true, for our knowledge is not complete. All that one can do is to describe the situation in general terms, basing the presentation on the information which is available.

Medical care, I take it, embraces both preventive and curative services. As public health workers, we are aware that any attempt at division is purely arbitrary and may be justified for convenience in administration. Based on tradition and administrative experience, the program of activities of the modern public health department can be defined as of today. The interesting point is that this public health program is, in progressive centres, well in advance of legislative requirements, and furthermore, it has extended somewhat rapidly, during recent years, into the realms of diagnosis and treatment.

Public health services in Canada are, in general, modelled on the American pattern. There are some evidences of deference to the British tradition, such,

*Presented at a joint session of the Canadian Public Health Association (twenty-eighth annual meeting) and the Ontario Health Officers Association (twenty-fifth annual meeting), Toronto, June 13, 1939.

for example, as the requirement for a health officer that he be the holder of a medical degree. We medical men blushing admit our superiority as directors of public health organizations.

The inadequacies of our public health services are not hidden. There are large areas of this country which are not served by full-time local health departments. If we believe that such an organization is the essential basis for adequate local health services, then we are right in concluding that the provision for public health is grossly inadequate in those areas where there are not full-time local health departments.

The second index to adequacy of public health services is the budget. Making due allowance for excellence in staff and administration, it is nevertheless true that one dollar cannot do the work of two dollars in purchasing preventive health services. If we agree that one dollar per person is the minimum sum required by local health departments to set up a basic balanced program, then the vast majority of Canadian people, even those who are living where there are organized local health departments, are not receiving the benefits of preventive services to anything like the extent to which such services can be purchased.

The third point in the consideration of the adequacy of public health services is the quality of personnel. Only one Canadian province, I believe, has seen fit to write into the provincial health act the qualifications for the personnel of health departments. Just so long as it is possible to appoint unqualified persons to positions for which special training is required, there is a very practical danger of inadequate services due to unqualified personnel.

Adequate medical care of those who are ill may require one or all of the following: services of physicians, dentists, nurses and subsidiary personnel, together with the special facilities provided by the modern well-equipped hospital for diagnosis and therapy.

The basis of good medical care is a well-qualified medical profession. The medical schools of Canada maintain a high standard, so that the preparation of the future medical practitioners is assured in a reasonably satisfactory manner. We are fortunate too in our dental and nursing schools.

It is, however, interesting to note that while organized medicine does, in general, favour the continuation of our present organization for the distribution of medical care services, based upon the general practitioner working in and from his own office, our medical schools are preparing their students to practise scientific medicine as part of a group to whom hospital facilities are readily available.

Times change, and it is generally admitted that it is not possible to practise modern medicine without hospital facilities. If that is true, then it is obvious that the centralization of hospitals in the larger urban areas does not meet the situation, for this leaves the rural practitioner without the facilities which he needs if he is to serve his patients properly.

In so far as institutional facilities are concerned, we know that east of Ontario there is a grave lack of sanatoria beds for the tuberculous, and also that

in most of the provinces there is a very real need for more beds in the mental hospitals.

Perhaps our greatest need as regards general hospitals is a program of planning, based on need, to replace the rather "hit-or-miss" policy which only too often determines the location and erection of hospitals.

A visiting-nurse service is a highly desirable, if not essential, part of the community organization for medical care. Such being the case, it is obvious that if a visiting-nursing service is available to not more than one-third of the population, then the remaining two-thirds are not being adequately served, that they are being deprived of nursing care which is so often of major importance in the treatment of the sick. Particularly do we think of the nursing care of maternity cases and of the newly born.

Naturally we would like to know whether or not the treatment of the sick in Canada can be called adequate.

There are at least three main factors concerned, any one of which alone or in combination with one or both of the remainder may erect a barrier which prevents or inhibits the person requiring treatment from securing the care of which he stands in need. These three barriers come from ignorance, economic status and geography.

Medical care cannot be said to be adequate, even though it is readily available and the problem of cost is removed, if the public has not been taught to make use of the care which is available for the asking. That ignorance is a major factor is well known, as can be demonstrated, for example, in the frequent failure of the public to obtain visiting-nursing care when this is freely available.

Medical care cannot be considered adequate if it is not available because it costs money which the patient either does not possess or if payment means deprivation of the other necessities of life for the family. Just what percentage of Canadians are medically indigent in this sense we do not know accurately. In my opinion, a family is medically indigent, in that it is not possible for its members to purchase medical care on a fee basis, if the family income is below \$1000 a year, and this means about twenty-five per cent. of our population. It seems to me that the responsibility lies with those who would not accept this statement to show how such families can, of themselves, pay for medical care.

Medical care cannot be considered adequate if those who are providing the care do not receive a reasonable financial return for their services. A system which fails to consider this point is doomed to mediocrity as it defeats the objective of a high standard of medical care by discouraging those who would make good medical practitioners from the study and practice of medicine because they cannot hope to secure a fair living as members of the profession.

Medical care cannot be considered adequate if distances are such that the difficulty of bringing patient and doctor together is a serious problem, nor is a distant hospital bed of any value to the patient who cannot reach it.

There is only one satisfactory way to find out if the people are receiving adequate medical care, and that is to follow a representative cross-section of the population over a period of years.

Lacking such a study, we naturally turn to our vital statistics for information. We find that, for a period of years, the infant mortality rates in some provinces are much higher than those for other provinces. The same is true as regards tuberculosis mortality rates.

These two rates are sufficient to show that medical care (in its broadest sense) is relatively inadequate in certain provinces.

It is so easy to offer as an explanation for such an undesirable state of affairs that there are some inherent conditions in certain areas and provinces which account for the high rates. The interesting observation is that the lowest rates are always in the areas where the best work is being done. It is quite true that local conditions may increase the difficulties, but that is all. If medical care services are adequate, good results will follow as surely as sunshine follows the rain.

The conclusion I would draw from the available information is that our local public health services are either lacking or inadequate in many parts of Canada. I would also conclude that medical care of the sick has not reached a high level of adequacy throughout the country as a whole.

The first point in this inadequacy, the local health departments situation, could be corrected in a comparatively short period of time. We know how to bring this about. Given the necessary money—which, after all, is not a large sum when we consider the way we speak of millions nowadays—with one dollar per person per year we would be assured of the possibility of building up local health department services to a reasonable standard of adequacy right across the country.

The economic side of the problem is naturally important. Capacity to raise money through local taxation varies greatly as between local areas. In some areas, it would be impossible to increase local taxation, and from the level of these areas, capacity to pay ranges up to the local areas where an increase is possible, provided the tax-payers are willing.

It is obvious then that if adequate local health department services are to be developed in all parts of the country, a system of grants-in-aid to the local areas will be necessary. The only sound basis for such grants-in-aid is the need of the local area, plus a willingness on the part of the residents of the area to contribute within their means. To distribute such grants on a population basis does not take into account the real purpose of grants-in-aid, which is to equalize conditions.

No one will dispute the right of every individual to the necessities of life which include medical care. It is obvious that if the indigents and dependents on the state or private charity are to receive medical care, it must be provided either on a charitable basis by the medical profession and the hospitals, or else the cost must be borne by the state as a whole and paid for out of public funds. There is no reason why one section of the public, the medical profession, should be required to assume a responsibility which belongs to the public in general. This is now being recognized, in part, by some governments, and, as a result, we see in Ontario, for example, that public funds are being made available to

pay for the medical care of the unemployed and their families in their own homes, through the general medical profession.

There has been considerable discussion in Canada about the possibilities of meeting the economic hazard of illness, at least for the low-income group, through some system by which the risk would be spread over the entire group. Western Canada has led the way through a form of state medicine known as the "municipal physician system". Various voluntary schemes have been in operation. Two provinces have passed health insurance legislation, but in neither case has there been progress beyond that point.

Certain steps can be taken. One is the education of the public as to the need for and the value of medical care. Another is planning the location of hospitals, which means the availability of special diagnostic facilities. Neither of these, however, will achieve results unless the necessary action is taken to deal with the economic condition which deters people from securing medical care early and which makes it impossible for the practitioner of medicine to earn a fair living in the area where his services are needed.

In a country of the dimensions of Canada, it is unlikely that any one plan for the provision of adequate medical care would be suited to all parts of the country. Nevertheless, just so long as our present situation continues, we know that medical care for many of our fellow-countrymen must be inadequate—a condition which should not be allowed to persist.

What Can the University Contribute to Public Health Education?*

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ALTHOUGH my title is in the form of a question, there is no question, in my mind at least, that the universities of our country can, if they wish, make a definite and useful contribution. It is unthinkable that our institutions of higher education should not be represented among the various agencies which share in the work of public health education.

At once we encounter the question: "Is education of this sort a function of the university?"

The answer comes in the form of another question: "What branch of learning is *not* a function of the university?"

Our universities give to their arts and science students many courses which bear directly or indirectly on the great and highly complicated physical problems of mankind.

Look at the set-up: here, strung across the land, are great institutions of learning, offering courses which deal with governmental structures and functions, courses in economics, sociology, history, the biological sciences including human biology, anthropology, genetics, anatomy, physiology, personal hygiene and physical education, bacteriology, immunology, pathology, psychology, nutrition, and many other subjects less obviously, less directly, but none the less definitely connected with our physical interests. There, I say, is the existing set-up, and yet someone is always asking us: "What has a university to do with health education, and is it any of our business? Why not leave it to the professionally-trained authorities in that field?"

The answer is very simple. No matter what opinions you may hold as to the functions of education or of government, it is clear that *in a democracy* public health is everybody's business if it is to have everybody's understanding and support.

We have encountered a few (fortunately very few) public health officers who deplored the inadequacy of the appropriations made for public health work and at the same time were strongly of the opinion that "public health is solely the business of the health department and the health officer." I think it is time we realized that the only way to gain greater financial, moral, or co-operative support from the public is to interest and educate that public toward a well-informed understanding of the health organizations which serve it. Putting it

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bluntly and colloquially, if you want more *money* for public health work, you will have to make more *friends* for public health work. This can only be done by a great increase in public health education, including better methods of publicizing the work of the national, provincial, and municipal departments of health, and also by more direct and more frequent contact of public health officers with the public.

The alternative is the authoritarian and bureaucratic method, which makes few friends, derives only inadequate appropriations from the public funds, and thus restricts the health services to only a fraction of what they might otherwise accomplish. It is a method that is against common sense, let alone the higher levels of intelligence, and it is not in keeping with the spirit and methods of a democracy. I repeat, public health must be everybody's business if it is to have everybody's support.

Our past pioneers and present-day leaders in public health have not been of the bureaucratic type. The very nature of public health work draws to it men and women who have a sympathetic understanding of our social and economic as well as our physical problems, and whose personal qualities are marked by kindness, helpfulness, and a truly democratic spirit of public service. I have always found them so.

Canada owes as much to her public health doctors and nurses, past and present, as she does to any other body of men and women who have shaped her beginnings, moulded her nationhood, and guarded her safety and happiness. They have defended us against enemies that no fortress could ever resist, and that no cannon could ever conquer. They have served quietly, but with a devotion and self-sacrifice that no statesman or soldier could surpass. They deserve the honour and gratitude of all our people, and I—who am not professionally engaged in public health work—take this opportunity of paying them this brief but heartfelt tribute.

* * *

Now if we accept the postulate that public health work is everybody's business, and that its workers need the support of all our people and all our institutions, then we may proceed at once to a discussion of how the universities of our land may help.

The university has already been the centre of *professional* training for public health officers and public health nurses, and their medical schools have provided courses in public health and preventive medicine as a regular part of a medical education.

We all rejoice to hear that the Rockefeller Foundation has just given a ten-year grant of \$350,000 a year to Johns Hopkins Medical School to establish a department of preventive medicine with a full four-year course in that subject.

But all this is specialized professional training. What we want to know is: what can the university do through its students by its courses of study?

We may divide our answer into two parts: (a) intra-mural courses and (b) extra-mural or extension services.

Intra-mural Courses

During the past twenty years most of our universities have given increasing attention to the teaching of health. The courses have consisted largely of classroom lectures in hygiene and physical education, and physical training in the gymnasium. Such instruction is still far short of what it must ultimately become. We must realize, moreover, that it puts most of its emphasis on personal hygiene and self-culture and not enough on community health and social responsibility. It tries to teach the student what he needs to know as an individual, but it has been very deficient in teaching him his obligations as a part of the social organism. It has not heeded that oft-repeated utterance of public health leaders, namely that "you can not separate personal hygiene and public health."

It is therefore my contention that health teaching in our colleges and universities must be expanded to include an adequate presentation of the problems of public health and a knowledge of the organizations which deal with them. I further contend that such knowledge, plus an inculcated sense of responsibility to the community, is an indispensable ingredient in any system of education that claims to prepare our young men and women for intelligent citizenship.

I will go still further and say that a training in personal and community health must be placed among the courses required for a degree.

Nature has made no exceptions in her list of requirements of what all living things, man included, must be and do if they are to survive and prosper, and no system of education can continue indefinitely to ignore natural law as it operates in human biology. Our entire system of graded education must recognize and obey natural law, or it will eventually be superseded by a more realistic one which does. Our universities in particular are under sharp and constant criticism these days because, to quote their critics, "they do not fit our sons and daughters to meet the problems of every-day life." I think that most of that criticism is ill-informed and unjustified, but I also think that no matter how splendid those services which our universities render may be, they are still deficient in co-operating with the forces working for man's physical progress, and that we are now under pressure to remedy that deficiency.

Now for concrete suggestions as to the nature of intra-mural teaching:

I would suggest first that it is not necessary to set up any special course in public health education as such. It is not our business to present a full and technical study of public health. That is the business of the professional schools, and they are doing their work admirably and efficiently.

It will meet all needs of general education if we add to our present health teaching a study of the structure and functions of our national, provincial, and municipal departments of health, and of the major voluntary health agencies. I repeat that such a study need not be elaborate nor technical. It will suffice if it gives the student a general picture of the problems and responsibilities which the official and voluntary organizations have been designed to meet. It must give him, too, a sense of his own personal indebtedness to these health services from which he derives his own protection. Most important of all, it must be so

presented that it will stimulate and inspire him to co-operate with and support these organizations when he returns to his home community or to some other field of work, for he must be made to realize that he and his community will profit reciprocally by the support they give to the official and voluntary health services. He must be made to understand that every community owes its moral support as well as its financial support to the men and women who guard the health of the community, and that it is as much the duty of every citizen to help his government fight disease and death as it is to serve his country in time of war.

Now if teaching of this kind is not a necessary part of a university education, then I must resign my chair and spend the rest of my life trying to find out why a sense of social responsibility is thus excluded from the thing called "culture".

Let me take you for a moment to a university in Eastern Canada, where, for almost twenty years, a course of the kind suggested has been in operation.

The course is entitled Personal Hygiene and Public Health. About two thousand students, representing about two hundred communities, have taken that course, and it is now required of all students proceeding to a degree in either arts or science.

In those portions of the course which deal with public health, the student is taught the general structure and functions of the national and provincial health departments. General studies in the annual reports of these departments are assigned, and the student must give particular study to the conditions prevailing in his own home district.

During the holidays he is required to make a health survey of his own community. These community health reports cover such subjects as locality, geographic character, population, industries, housing, schools and school conditions, medical inspection of schools, medical and public health services available, tonsil and adenoid clinics, dental clinics, toxoid clinics, well-baby clinics, incidence of communicable diseases, maternal mortality, infant mortality, nutrition, milk supply, water supply, sewage disposal, recreational facilities, organizations for children and young people, and many other subjects which bear directly or indirectly on community health conditions. His attention is particularly directed toward two things which I consider of the highest importance, namely, the work of the public health nursing services, if his community is fortunate enough to have such service (and if not, *why* not?), and secondly, the extent of Junior Red Cross activity in the local schools. It is not a matter of theory but of plain record that any community which has conscientious health officers, a full-time public health nursing service, and a high degree of Junior Red Cross activity in the schools has a better health record and a far higher intelligence in health matters in general than is the case in a community which does not possess these blessings.

Many of these student reports are remarkably thorough and would do credit to more experienced health workers. Some are illustrated with original photographs, particularly of bad housing conditions, and a few even make maps

and blue-prints to supplement their written report. Statistical material is obtained from the provincial health reports, and additional information is frequently provided by local health officers, doctors and nurses, and from local officers of the voluntary organizations. Students show genuine interest in this survey work, and their most frequent comment is "I never really knew my community until I made this survey."

From time to time, as opportunity offers, health officers and voluntary organization officers personally visit the class and address the students on their particular field of work. Such personal visits have been of great value to the students. A motion-picture lecture on the work of the Junior Red Cross for crippled children has been given several times in recent years, and has evoked the greatest interest and enthusiasm.

But I must not weary you with too much description of this course. Let it suffice to say that we feel that such study can hardly fail to be an asset to public health education by enlisting the interest and support of many university graduates in many communities for the work of the official and voluntary health organizations. I do not over-estimate its value, and I recognize its limitations. It is simply one university's contribution.

Extra-mural Courses

Now let me suggest very briefly what service the community can render through extra-mural or extension services. We in Canada have not developed university extension work to the same degree as the universities of the Old Country, but as our country grows, I am confident that university extension work will increase to a degree hardly dreamed of now.

The interest in adult education which has recently made such remarkable growth throughout Canada supports that prophecy. Our universities are already being asked to provide material and speakers for adult study groups all over the country, and here I think is an excellent channel through which to provide material for public health education. It is my hope that the universities and the leaders of the adult education movement will both develop this valuable potentiality to the utmost.

Now a word of caution. I feel very strongly that all public health teaching should first have the authorization and approval of an official body, such as the official health departments or a committee of this association. Information should be authoritative and all utterances should be entirely in keeping with official policies and procedures. Such a proviso is not only a safeguard but is also a means of co-ordinating and unifying public health education.

Museum

In addition to intra-mural and extra-mural courses, it would be of value if every university had a part of some building on its campus devoted to a permanent exhibition of health material—call it a museum of hygiene if you will—and carried on co-operatively by the university and the national or provincial departments of health. I think that the idea is feasible, and I can think of no obstacle

to such co-operation. Such a museum need not be large, nor expensive, nor need the upkeep cost much. The number of exhibits need not be great, and should be designed to stimulate interest and to serve a teaching function rather than mere entertainment. Here, too, is a valuable opportunity for the distribution of health literature, and for informal talks with visitors by a part-time (or even a full-time) curator.

* * *

A timely editorial in the May issue of the *CANADIAN PUBLIC HEALTH JOURNAL* suggests that at this annual meeting we take stock of our work, and subject ourselves to wholesome self-criticism.

Let us do that, and ask ourselves "Wherein does public health education fall short of its objectives? What does it need most? More personnel? More money? More publicity? More co-operation from its allies in other fields of human betterment, and from the public at large?"

Yes, it needs all these things, but it needs one thing more than all of them put together.

It must somehow develop the ability to make people care. Without that ability, all our research, all our attempts to disseminate health information, will produce only a very limited and disappointing harvest. Health education, to use a horticultural metaphor, is not a "self-fertile variety". It needs the cross-pollination of a deeper and more personal concern on the part of both the teacher and the taught. It needs, in the words of one of our distinguished guests, Dr. Haven Emerson, "something of the spirit of religious devotion of the crusaders". It needs self-discipline and self-denial, example as well as precept, faith in the ultimate triumph of humane ideals in the society of the future, coupled with patience with the slowness of human evolution. It needs the critical eye of the scientist, and the eye of the prophet who sees afar off the city of God.

Will you forgive me if I close by quoting from an address which I gave in this city seven years ago and which was published in the *CANADIAN PUBLIC HEALTH JOURNAL*.

We are often told that with the increase of scientific knowledge disease will vanish in the future evolution of mankind.

Such statements are the product of an unscientific and unwarranted optimism. Disease will always be with us. We have reduced its ravages and we will reduce them still further. Preventive medicine, public health, therapeutics—all have greater victories awaiting them. But even after they have won these victories there will still be a great residue of disease due to folly, carelessness, bad physical management, and dysgenic impairment. The most brilliant research, the wisest legislation, will never be able to overcome the results of faulty attitudes.

Granted that we can some day devise a perfect system of hygiene for the individual and the community, the problem will still face us:—how are you going to make people *care* about it, accept it, practise it? How are you going to bring about a higher ideal of the sacredness of human life? How are you going to get the lower and dysgenic classes of humans to stop breeding more dysgenic generations? How are you going to alter thistle-genes into fig-genes? By research, forsooth? The most enthusiastic scientist would not dare to say that.

As a worker in the field of science I am proud of the contributions of science toward increasing the safety and comfort of mankind. But it is also because I am a scientist that I realize and must point out the eternal limitation of science: science can only tell us what we can do—what we ought to do—but it can't make us do it.

The central problem of human improvement is not the increase of knowledge. The old copy-book phrase told us that "Knowledge is power." Knowledge is *not* power. Knowledge is a tool, not a force. It is produced by an ideal; it must be activated and applied by an ideal.

What then is our central problem? To conquer ignorance? No. To conquer folly and selfishness and injustice as well as ignorance; to add to the cold white light of research the warm glowing light of greater sympathy and tenderness and compassion; to distribute throughout all the levels of society that sense of a common responsibility and interdependence which we call brotherhood; to give democracy a new definition and a new vision, wherein every child shall have physical as well as political and legal freedom; where every child shall have a fair opportunity to begin life without the handicap of disease or feeble-mindedness or a degrading environment, for there is no room under the justice of God or man for the cruelty of such a predestination.

The two greatest potentialities for good in the world today are Christianity and science. The first is the principal force; the second is the principal tool. Neither can render its fullest service to humanity without the other; the motive and the method must be complementary and inseparable.

I know of no better exemplification of either that method or that motive than the work of the public health officers and organizations of Canada, and I salute them as I thank their representatives who have done me the honour of listening to me today.

Nutrition in Canada*

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IT is becoming increasingly evident that nutrition is an important part of a public health program. Common sense, well supported by scientific evidence, tells us that people cannot be healthy unless they are properly fed. Control of infectious diseases is not alone sufficient to ensure health in a community and the old idea that it was enough to chlorinate the water, to protect the children against diphtheria, and to dispose of sewage is no longer adequate.

The importance of nutrition has been recognized by the Dominion Council of Health in the appointment of a committee on nutrition and of a scientific advisory committee consisting of well-known experts in the field of nutrition. The Dominion Government, under the aegis of the Minister of Pensions and National Health, has appointed a Council on Nutrition and has provided, this year, a grant to support the activities of this Council.

The duties of the Canadian Council on Nutrition have been clearly outlined by its chairman, Dr. R. E. Wodehouse, Deputy Minister of Pensions and National Health, in a report made by him to the League of Nations. One important task is to determine the extent and types of malnutrition to be found in Canada. This will be accomplished by dietary surveys. There has been a great lack of information about nutritional conditions in Canada. I should like to refer to three recent surveys, one of which was sponsored by the Council on Nutrition.

The first survey to which I shall refer (1) was carried out among 100 low-income families in Toronto by a privately financed committee consisting of members from several University departments and from several social service organizations. A preliminary report has been published and I propose to outline briefly some of the results reported. In comparison with the Canadian dietary standard, 3 per cent. of the families had total food supplies which would be considered adequate. Protein supplies were sufficient in 7 per cent. Twelve per cent. of the families had adequate supplies of calcium but only 5 per cent. had proper quantities of iron. If one considers average percentage adequacies for all the families, one secures the following results: calories, 76; protein, 77; calcium, 70; and iron, 62. In these four respects the food intakes of these families were approximately 75 per cent. adequate.

In this Toronto survey individual food consumption was measured and because this was done it was possible to find that there was disparity in the distribution of food between the members of a family. Fathers fared best, then young children, then older children, and mothers least. Since the amount of

*Presented before a joint session of the Canadian Public Health Association (twenty-eighth annual meeting) and the Ontario Health Officers Association (twenty-fifth annual meeting, Toronto, June 14, 1939).

food in the household was limited, this unequal distribution of food would be expected.

From the results so far presented by the Toronto committee one is forced to conclude that most of the families studied were not being properly fed.

A survey, sponsored by the Canadian Council on Nutrition, on a smaller number of families in the same income group as were the Toronto families, has recently been completed in Edmonton by Professor Andrew Stewart and his associates (2). The nutrition of the Edmonton families was definitely better than was found in Toronto. None of the 29 families showed any marked degree of malnutrition. There are two probable reasons for this difference between the two surveys. The average number of persons per family in the Toronto survey was 6.02, while in Edmonton the average number was 4.1. For the same total expenditure on food the western families should have had a diet appreciably more adequate, since there were fewer persons to feed. A second factor, operating in the same direction, is that food prices in Edmonton appear to be 10 per cent. less than in Toronto. Considering these two factors one would expect better nutrition in Edmonton at the same income level.

A third survey which should be mentioned is that reported in a volume entitled "Unemployment and Health", published from McGill University by Marsh, Fleming and Blackler. An examination was made of the health of unemployed persons in Montreal and it was found that one of the main reasons for poor health was under-nutrition.

Prevention of Malnutrition

Sufficient food is available, or could be made available, in Canada to supply all Canadians with an adequate diet. Two of the three surveys to which I have referred indicate that malnutrition exists. It should be a matter of public health concern to ensure that Canadians are fed as well as possible. To discuss prevention we must consider the causes for the occurrence of malnutrition. In this country there are two principal causes: financial inability to buy an adequate diet and a lack of knowledge of the basic principles of nutrition and of how to buy foods economically. I am not particularly optimistic that much can be done to overcome the first obstacle but I believe that much can be accomplished by education.

Different types of evidence could be cited to show the lack of nutritional knowledge. A considerable amount of present-day advertising of foods presupposes ignorance, otherwise the fallaciousness of many of the claims would be readily apparent. The current wave of emphasis upon alkaline foods to prevent acidosis takes advantage of the absence of knowledge. It is quite inadvisable to urge the increased use of milk because it is said to be an alkaline food. Other advertising claims are equally unnecessary. I doubt very much that bread helps to burn up unwanted fat. Adherence to dietary fads is another demonstration of the lack of nutritional knowledge. Erroneous popular notions such as the opinion that cheese is constipating or harmful for children interfere with the advisable use of healthful foods. Another type of ignorance which should be

combated by training is that relating to the purchase of foods. Even if housewives know the essential principles of nutrition it is advisable, particularly in low-income groups, that they know how to buy foods economically.

In the preliminary report of the Toronto survey reference was made to two families used as an example of how money may be wasted in the purchase of food. With the same number of individuals of the same age and with the same income, one family secured a relatively adequate diet and the other had a comparatively poor one, although both families spent the same amount for food. For the amount expended both families could have had adequate diets.

There has been a great deal of discussion about relief food allowances in Toronto and many statements have been made about inadequacy. Whether a family secures an adequate diet depends on two factors: the amount of purchasing power available and how this is expended. We know how much the food allowance is; we know practically nothing about how it is spent. Until that information is secured we can provide no accurate information about the nutrition of families on relief.

Statements have been made regarding the amount of the food allowance and one claim in particular, that the allowance will provide a diet 57 per cent. adequate, deserves consideration. This figure is secured by comparing the relief allowance with the amount an adequate diet is supposed to cost. A family of father, mother and three children receives from the city for one week a grocery voucher worth \$2.25, a meat and vegetable order worth 85 cents, 14 loaves of bread and 14 quarts of milk. The total cost to the city per week is \$5.66. The bread and milk are secured from waggon deliveries, using tickets purchased by the city at special prices. If the family had to purchase these tickets at regular retail prices the cost would be increased from \$5.66 to \$6.18. The higher figure is the actual value to the family of the relief allowance and is the amount which should be used for comparison.

How much should an adequate diet for a family of five cost in Toronto? Miss Patterson of the School of Hygiene has compiled a shopping list to provide an adequate diet for such a family and actual purchasing shows that the food supply for one week can be secured for \$7.65. No claim is made that this is the lowest cost for an adequate supply of food but it does provide appetizing meals which are not monotonous. Moreover, this furnishes 3300 calories a day for the father, which is more than would be needed for a man on relief not engaged in active work. Using this as comparison the relief allowance could provide a diet 81 per cent. adequate, if the allowance were properly spent.

I have pointed out that the family of five on relief receives 14 quarts of milk per week, which is four-fifths of a pint per person per day. The average milk consumption in Toronto is two-thirds of a pint per person per day and that of low-income working families is one-half pint. The relief allowance is in excess of both figures. Moreover, for most families on relief in Toronto, the milk allowance equals that recommended by the Council on Nutrition. A family of five on relief should have 80,000 calories of food per week. The bread and milk furnished to such a family will give 30,000 calories, 39 per cent. of the

required total. The grocery, meat and vegetable vouchers are worth \$3.10. The average cost of purchasing 100 calories in a low-cost adequate diet is 0.8 cents. The vouchers, if properly spent, should provide 38,000 calories, bringing the total for the week to 69,000 calories, or 85 per cent. of the required amount.

In my opinion the relief allowance in Toronto can provide a diet 80-85 per cent. adequate, provided that the vouchers are carefully spent. It has been reported (1) that the diets of low-income, *working* families in Toronto are 75 per cent. adequate. The relief allowance is not sufficient to provide an adequate diet but it can furnish nutrition more adequate than is being secured by working families.

It would be most valuable to find out how the relief vouchers are being spent. My prediction would be that the diets of many families could be improved without increasing the allowance by training mothers how to buy food. Such training for all mothers having limited amounts to spend would be a practical contribution toward improving nutrition.

Nutrition has been given a prominent part in the courses on health recently introduced into Ontario schools. The curriculum has been carefully worked out to provide essential training for healthful living. This course will have a marked effect upon public health work in Ontario. Not only will the next generation be better trained but information will be carried home to influence adults. Medical officers of health should be familiar with this course and should be ready to co-operate with teachers in carrying it out.

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A Study of 456 Deaths in Ontario Attributed to Diabetes

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TO provide information concerning the mortality attributed to diabetes in Ontario, two surveys have been made, through the co-operation of the physicians reporting deaths from this disease, the first during the period June 1929 to February 1930, and the second during 1935. The studies were initiated because of the increasing number of deaths attributed to diabetes in statistical records. Since Insulin had been supplied by the Department of Health of Ontario from the time of its discovery in 1923 to patients without charge when certified as being unable to pay for it, the study of deaths from diabetes in Ontario is of particular interest. There has been no occasion in Ontario for any needy diabetic to be without Insulin. This paper presents the findings of the second enquiry, relating to persons whose deaths were attributed to diabetes in 1935.

As in the previous study, copies of all death certificates in which diabetes was stated either as primary or contributory cause of death were obtained through the co-operation of the Registrar-General of Ontario. A letter requesting information concerning each death was sent to the physician reporting the death. For the convenience of the physician in replying to the enquiry, a copy of the medical certificate as supplied by him was recorded on the enquiry form, together with the facts relating to age, residence, and date of death as supplied on the death certificate.

The following questions were asked: Was the patient under regular medical supervision? Was the patient under Insulin treatment at any time? For what period? How long had the patient been under Insulin treatment at the time of death? If so, what amount was prescribed daily? Was Insulin being used at time of death? Did the patient co-operate in the treatment and have an intelligent understanding of the use of Insulin? In your opinion, should this death be attributed to diabetes in medical mortality records?

The total number of death certificates during 1935 in which diabetes was mentioned was 687. The response on the part of the physicians was most generous and replies were received regarding 602 of the deaths, representing 88 per cent. More than two-thirds of the physicians supplied case notes, in some instances appending detailed clinical reports.

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The steady increase in the number of deaths attributed to diabetes during the past thirty years, particularly the increase among females, is well known. In table I the recorded diabetic mortality in Ontario, 1909 to 1937, is presented.

TABLE I
RECORDED DIABETES MORTALITY
ONTARIO, 1909-1937

Year	Deaths	Rate per 100,000	Male		Female	
			Deaths	Rate per 100,000	Deaths	Rate per 100,000
1909.....	231	9.4	114	9.0	117	9.8
1910.....	235	9.4	111	8.7	124	10.3
1911.....	283	11.2	158	12.1	125	10.2
1912.....	269	10.4	132	10.0	137	11.0
1913.....	280	10.7	134	10.0	146	11.5
1914.....	283	10.7	142	10.4	141	10.9
1915.....	320	11.9	155	11.3	165	12.5
1916.....	294	10.8	140	10.0	154	11.6
1917.....	320	11.5	162	11.3	158	11.6
1918.....	359	12.8	169	11.8	190	13.7
1919.....	308	10.8	145	10.0	163	11.6
1920.....	333	11.5	156	10.6	177	12.4
1921.....	334	11.4	154	10.4	180	12.4
1922.....	370	12.4	162	10.8	208	14.1
1923.....	398	13.1	173	11.3	225	15.0
1924.....	331	10.8	144	9.3	187	12.3
1925.....	339	10.9	144	9.2	195	12.7
1926.....	398	12.6	171	10.7	227	14.7
1927.....	441	13.8	190	11.7	251	16.0
1928.....	439	13.5	180	11.0	259	16.3
1929.....	448	13.7	185	11.2	263	16.2
1930.....	477	14.4	190	11.4	287	17.5
1931.....	496	14.5	183	10.5	313	18.6
1932.....	523	15.1	199	11.3	324	19.0
1933.....	517	14.5	207	11.4	310	17.8
1934.....	522	14.4	212	11.5	310	17.4
1935.....	524	14.3	207	11.1	317	17.6
1936.....	566	15.3	230	12.2	336	19.6
1937.....	579	15.6	224	11.8	355	19.5

The data indicate that there has been a persistent increase in the crude death rate, and that although the crude death rate among males has increased, the increase in the death rate from this disease among females has been much greater. The trend is similar to that in the United States and in Great Britain. It is generally considered that the recorded mortality from diabetes does not fairly represent the actual mortality from this disease. Several explanations are offered for this increase in the crude mortality, including the aging of the population, the improved facilities of diagnosis leading to the more frequent mention of diabetes on the medical certificate of death regardless of whether it was an important factor in the fatal outcome or not, and the effect of the present statistical practice in classifying causes of death where multiple causes are stated on the death certificate by which precedence is given to diabetes.

The purpose of the enquiry was to learn from physicians the pertinent facts relating to deaths in which mention of diabetes was made on the death

certificates, to enquire concerning the use of Insulin, and to learn the conditions regarding treatment as relating to Insulin and the extent to which the patient co-operated. From the question, "In your opinion, should this death be attributed to diabetes in medical mortality records?" it was hoped that the certificate as filed by the physician could be more satisfactorily interpreted, and that it would be possible to learn how the present statistical practice as relating to classification agreed with the physician's opinion.

As previously stated, diabetes was mentioned on the death certificate of 687 persons in 1935. As classified by the Dominion Bureau of Statistics, 524 were recorded as deaths from diabetes, the rate being 14.3 per 100,000. Reports were received concerning 602 of the 687 deaths in which diabetes was mentioned on the certificate. Of the 602 deaths for which reports were received from physicians, 456 were classified as deaths from diabetes, using the practice of the Dominion Bureau of Statistics. Data concerning the use of Insulin and the co-operation of the patient relate to the group of 456 persons whose deaths were officially classified as due to diabetes. Data concerning the statistical classification relate to the group of 602 deaths.

THE USE OF INSULIN

Of the 456 persons whose deaths were officially classed as due to diabetes and concerning whom data were supplied by the attending physician, 321 (70 per cent.) used Insulin at some time; 112 did not use Insulin, and no information was supplied concerning 23. In the survey of 1929-30, 56 per cent. had used Insulin at some time. There appears, therefore, to have been a definite increase in the use of Insulin among this group of diabetics in 1935. Data published by the Metropolitan Life Insurance Company concerning the use of Insulin among policy holders whose deaths were attributed to diabetes indicate that in 1930 64 per cent. used Insulin at some time, and 72 per cent. in 1935.

From the clinical data kindly supplied by many of the physicians as well as the answers to the questions, sufficient information was furnished to indicate in a general way the extent of the use of Insulin. The data are presented in table II. The regular use of Insulin was defined as the use of Insulin regularly for a period of at least three months before death.

TABLE II
EXTENT OF THE USE OF INSULIN IN 321 PERSONS WHO USED INSULIN AT SOME TIME
AND WHOSE DEATHS WERE CLASSIFIED AS DUE TO DIABETES

Age	Only at Death	Irregularly	Regularly but Discontinued	Used Regularly	Total
0-19.....	7	1	3	3	14
20-49.....	10	10	..	14	34
50-69.....	35	37	27	61	160
70+.....	33	17	18	45	113
Total.....	85 (27%)	65 (20%)	48 (15%)	123 (38%)	321 (100%)

The data in table II relate to 321 persons who used Insulin. Only 123 of the group could be considered to have used Insulin "regularly". Eighty-five used Insulin only in the terminal illness or at the time of death. Forty-eight had used Insulin regularly but discontinued its use some time before death, and 65 used it irregularly.

In table III information is supplied relating to the age distribution of the group of 123 persons who used Insulin regularly.

TABLE III
INSULIN USED REGULARLY
(Age Distribution of 123 Persons whose Deaths
were Classified as due to Diabetes)

Age	Total Deaths	Used Regularly	Per cent.
0-19.....	17	3	17.6
20-49.....	45	14	31.1
50-69.....	212	61	28.8
70+.....	182	45	24.7
Total.....	456	123	27.0

It will be noted that in the group as a whole 27 per cent. used Insulin regularly. In the survey made five years previously, only 12 per cent. were considered to have used Insulin regularly, the same definition of this term applying. To this extent there is evidence of a more satisfactory use of Insulin.

One hundred and twelve patients did not use Insulin. More than half this number did not require Insulin according to the physician's report. The data are presented in table IV in age groups.

TABLE IV
INSULIN NOT USED
(Age Distribution of 112 Persons whose Deaths
were Classified as due to Diabetes)

Age	Not Required	Required but not used	Total
0-19.....	1	2	3
20-49.....	4	2	6
50-69.....	18	19	37
70.....	42	24	66
Total.....	65	47	112

As would be expected, Insulin was not required to the same extent in the age group over 70 as in the other age-groups.

MEDICAL SUPERVISION AND CO-OPERATION OF THE PATIENT

Of the 456 patients whose deaths were classed as due to diabetes, 270 were under medical supervision. Forty-five others received medical care only at

the time of death, and 75 received no medical care. In 66 of the reports, information regarding this was not supplied.

In table V information is presented indicating the co-operation or lack of co-operation of the patient when under medical care.

TABLE V
HISTORY OF MEDICAL CARE IN 456 PERSONS WHOSE DEATHS WERE CLASSIFIED AS DUE TO DIABETES

Age	Receiving Medical Care				No Medical Care	Only at Time of Death	Medical Care not Stated	Total
	Co-operation	No Co-operation	Co-operation Not stated	Discontinued				
0-19.....	2	5	..	3	..	6	1	17
20-49.....	13	7	10	7	8	45
50-69.....	58	39	3	27	30	17	38	212
70+.....	51	36	7	19	35	15	19	182
Total.....	124	87	10	49	75	45	66	456
270								

Of the group of 270 receiving medical care, less than one-half were said to have co-operated in their treatment. Eighty-seven did not co-operate, 49 discontinued having medical supervision, and in 10 no statement was made concerning the co-operation of the patient.

The problem of diabetes in the age group under 20 years is recognized as being particularly difficult. It is known that the disease is frequently not diagnosed and that the physician is called when the patient is in coma. Of the group of 17 patients under 20 years of age, 6 were seen by a physician only at the time of death; 3 discontinued medical supervision; and 5 would not intelligently co-operate in their treatment. Of the entire group, only 2 could be said to have been under medical care and to have been co-operating in their treatment. Because of the problem of diabetes in the young age group, a brief history of each of the 17 cases is presented.

Case 1: Age 10 months. On day preceding death, baby was brought to the physician's office unconscious. Onset of symptoms two days previous. Admitted to hospital. Urine showed sugar+++ and acetone++++. Treated for diabetic coma. Physician considered that "some cerebral accident, such as haemorrhage into the floor of the fourth ventricle" might have been the cause.

Case 2: Age 2 years. Diagnosed as diabetes two months before death. No Insulin was used as parents were not willing. Diet unsatisfactory. Died in coma.

Case 3: Age 5 years. Diagnosed as diabetes when three and a half years of age. During last 6 months received 60 units of Insulin a day. Lack of co-operation in treatment by parents.

Case 4: Age 6 years. In coma when seen. Condition had not been suspected by parents. Insulin administered in the treatment of coma.

Case 5: Age 10 years. Diabetes diagnosed at age of 6 years. Child was under medical supervision until 10 months prior to death, receiving 15-20 units of Insulin. Had discontinued Insulin treatment and medical supervision.

- Case 6:* Age 10 years. Child was first seen in coma and Insulin used. Had not been diagnosed previously.
- Case 7:* Age 13 years. Diagnosed as diabetes six months before death but not under regular supervision. Admitted to hospital in coma.
- Case 8:* Age 13 years. Diabetes had not been suspected. Admitted to hospital in coma.
- Case 9:* Age 14 years. Patient under supervision by hospital clinic, but for some months prior to death had not had supervision. Daily dose 40 units used irregularly. Diet was not adhered to.
- Case 10:* Age 14 years. Diabetes not suspected. Had taken ill at a summer camp. Admitted to hospital in coma.
- Case 11:* Age 12 years. Had been under treatment for diabetes for 7 months, receiving Insulin. Co-operated in treatment. Patient was subjected to asthma. Coma followed an intestinal infection.
- Case 12:* Age 15 years. Under treatment for some time for diabetes. Insulin was not used and patient would not co-operate in diet.
- Case 13:* Age 16 years. Seen first when in coma in September, 1933. Had co-operated in treatment, using Insulin daily. Had acute indigestion and discontinued food and Insulin for three days. Was seen in coma.
- Case 14:* Age 16 years. Diabetes diagnosed two years before. Patient was under supervision for 2 months during which time Insulin was used. Patient was then treated by drugless healer until physician was called when patient was in coma.
- Case 15:* Age 16 years. Condition was not previously diagnosed. Patient was admitted in coma.
- Case 16:* Age 18 years. Mentally defective, incapable of using Insulin or understanding dietary requirements. Died in coma.
- Case 17:* Age 18 years. Patient required 200 units of Insulin daily. Refused to attend a hospital clinic but was under medical supervision for three years. Two weeks before death discontinued treatment on the advice of a quack. Died within 10 days in coma.

STATISTICAL CLASSIFICATION

Based on the replies received to the question, "In your opinion, should this death be attributed to diabetes in medical mortality records?" and the physician's medical statement on the death certificate, a study was made of the relationship between classification (*a*) by official practice, (*b*) classification based largely on the form (order) of the medical statement, and (*c*) based on the supplementary data provided by the answer to the above question.

Classification according to Official Practice

It is recognized that the physician certifying a death is the only person qualified to state the cause to which the death should be attributed in medical statistics, and that a proper medical certificate is one which presents the physician's opinion; and further, that for statistical purposes it is desired that the cause of death tabulated shall be the disease or injury which initiated the train of events leading to death. When, however, multiple causes are presented on the certificate and it is not possible to interpret the physician's opinion, rules of preference are required for the guidance of those tabulating deaths. In Canada, when two or more causes are recorded on the medical certificate, one of them being diabetes, diabetes receives preference, as a general disease, over almost all local diseases. Certain general and local diseases are preferred to diabetes, however, when jointly stated. Cancer, tuberculosis, acute infectious diseases including influenza, are preferred to diabetes. In addition, preference

is given to lobar pneumonia, coronary thrombosis, angina pectoris, tabes dorsalis, general paralysis of the insane, acute intestinal obstruction, strangulated hernia, aneurysm, and puerperal sepsis. Diabetes is given preference over myocarditis, nephritis, cardiovascular-renal disease, arteriosclerosis, cerebral haemorrhage, apoplexy, septicaemia, and bronchopneumonia. There has been no change in the joint-cause practice in Canada with respect to diabetes since 1921 except that preference is now given to coronary thrombosis over diabetes, in accordance with the increased attention given to embolism and thrombosis of the coronary arteries.

As previously stated, there were 602 deaths in which diabetes was mentioned and concerning which reports were received from physicians. In table VI these are classified by cause, official Canadian practice being used in the selection of a single cause for tabulation where multiple causes were stated. Of this number, 146 (24 per cent.) of the deaths of persons whose medical certificate contained the word "diabetes" were ascribed to causes other than diabetes. Principal among these causes were coronary thrombosis, cancer, tuberculosis, influenza, lobar pneumonia, and intestinal conditions requiring operation.

TABLE VI
CAUSES OF DEATH IN 602 PERSONS WHOSE DEATH CERTIFICATES CONTAINED
MENTION OF DIABETES

Cause of Death	Number
Diabetes.....	456
Influenza.....	11
Tuberculosis.....	17
Other infectious diseases*	6
Cancer.....	27
Hyperthyroidism.....	2
Angina pectoris and coronary thrombosis.....	53
Lobar pneumonia.....	7
Diseases of digestive system†	11
Genito-urinary diseases.....	4
Accidental causes††	7
Mastoiditis with operation.....	1
Total.....	602

*Erysipelas, tetanus, syphilis, encephalitis lethargica.

†Ulcerative colitis, appendicitis, gall bladder diseases, hernia, intestinal obstruction, gastric ulcer.

††Drowning, burns, heat, falls.

Classification according to the Form of the Medical Statement

In only 71 of the 602 certificates was diabetes the only cause mentioned on the certificate. There were 531 certificates in which one or more other causes were mentioned. Accepting the form and order of the physician's statement in these latter certificates as indicative of medical opinion as to the cause of death for classification, 224 agreed with the official classification, and in 242 there was disagreement between the physician's statement and the official classification. There were 65 other certificates in which the statement of cause of death was unsatisfactory. These fell into two groups. In one group, the several causes of death stated were presented in an unreasonable, reversed or illogical order, obscuring the physician's viewpoint. In the second group, the two or more causes were written on one line, rendering it impossible to

determine the physician's opinion as to which cause should be selected. In the first group there were 34 certificates, and in the second group 31. Of the 456 deaths attributed to diabetes in official classification, the physician's statement agreed in 219 instances. Of the 146 deaths classed to other causes the physician's statement gave diabetes as the cause on 34 certificates. Thus, in 253 of the 602 deaths for which reports were received, the physician's statement of cause of death was diabetes. The 65 unsatisfactory certificates were classified according to the doctor's answer to the specific question. If the official practice had been applied, the number in which the physician's statement of the cause of death was diabetes would have been 280.

The interpretation of the physicians' statements was rendered more difficult since two types of medical certificates were in use at the time. The new Canadian certificate, similar to that used in Great Britain, had just been introduced. Two hundred and forty-seven of the certificates were on the new form.

Classification according to Supplementary Data

Each certificate was classed according to the physician's opinion as given in answer to the question, "In your opinion, should this death be attributed to diabetes in medical mortality records?" The replies included such words as "partly" and "contributory" and in 41 of the 602 replies received the physician did not answer the question directly. It was apparent that the answer "no" was given occasionally because the physician felt that the death could not be attributed to diabetes only. Many of the physicians supplied clinical notes and discussions of the cases. There were a number of instances of disagreement between the statement of cause of death, the physician's opinion and the clinical notes. Supplementary replies received from physicians when the term "cause of death" was discussed with them, resulted in a reversal of the reply to the initial query, reflecting the fact that many physicians have not a sufficiently clear idea of what is desired nor of the principle underlying death certification. Of the 456 deaths attributed to diabetes in the official classification, the physician's opinion as to the cause of death agreed in 262 instances. Of the 146 deaths classed to other causes, the physician gave as his opinion that diabetes was the cause in 29. Thus, of the 602 deaths for which replies were received, the physician gave as his opinion that diabetes was the cause in 291.

These observations indicate that dependence on rules of practice alone leads, in a substantial proportion of cases, to disagreement with the physician's opinion as given in answer to the specific question which was asked. They indicate also that the physician's preference as indicated on the medical certificate by the arrangement of the causes of death does not always agree with his expressed opinion.

Of the 687 certificates in which diabetes was mentioned, 247 were filed on the new Canadian certificate. Using this group for a similar study, it was found that 26 had a single entry and 108 contained satisfactory multiple entries, the order of statement on which indicated a preference with which the selection by joint-cause practice was in agreement. Of these certificates, 61 were classed to diabetes and 47 to other causes. The frequent disagreement of the physi-

cian's statement and his expressed opinion is evidenced by the fact that in 18 of the 61 classified to diabetes according to the physician's statement, the physician expressed his opinion that the death should not be attributed to diabetes. Of the 247 medical certificates, 177 were classified officially to diabetes. If the basis of classification had been primarily the physician's statement, selecting the cause preferred by the physician as expressed in the order of presentation of causes, the number of recorded deaths from diabetes would have been reduced from 177 to 115. This would represent a reduction of 35 per cent.

In Great Britain the rules of preference relating to diabetes are similar to those in use in Canada. The form of the death certificate at present in use in Canada is practically the same as that used in Great Britain during the past eleven years. The findings of studies which are being made in the Registrar-General's Department in Great Britain relating to the measure of success which the present certificate affords for presenting the physician's opinion are of special interest. According to the Report of the Registrar General's Department for the year 1936, there were 7,119 deaths assigned by rule to diabetes, whereas classification according to the physician's choice, as indicated by the order of statement on the medical certificate, would result in a transfer of 2,322 of these to other causes. On the same basis, 185 deaths from other causes would be added to the total number of deaths from diabetes, giving a net reduction in recorded diabetes deaths of 2,137, or 30 per cent.

These considerations make it clear that under prevailing conditions of medical certification and statistical practice, the true picture of mortality from diabetes and its trend cannot be secured from official vital statistics reports. A study of the death certificates in this survey indicates that physicians frequently had not indicated their opinion as to the relative importance of diabetes by making a proper statement. Most recorded diabetes deaths occur at advanced ages (40 per cent. in the age group 70 years and over) when diabetes may be present but not the underlying cause of death, which cause is desired for record in medical statistics. Application of the rules of preference results in the addition of many deaths to the total of the diabetes mortality which the physicians did not intend to be so recorded. At the same time, if the physician records diabetes on the medical certificate, it must be assumed by those responsible for the tabulations, other indications to the contrary being lacking, that diabetes was an important factor in the death.

If the physician clearly understands the form of the present medical statement of the cause of death, and so expresses his opinion as to the cause which should be selected in medical records when multiple causes are stated on the certificate, rules of practice will not be necessary. The physician must have a clear appreciation of the objective of the medical statement and the significance of an orderly record, and, further, must realize that only that condition (disease or injury), or conditions, should be mentioned on the death certificate which are considered by him to be important factors in death. Many physicians have in the past failed to indicate their opinion because they have not limited their statement to the entry of clinical conditions which are important factors. Errors in death certification cannot be made good by conventional rules,

although such rules may be helpful. Tabulation based on the physician's preference is the obvious and desirable objective. The rules of preference which have been used and are at present in use, cannot be discarded until there is sufficient indication that the fundamental principles and requirements are being generally observed. It is the hope of the Registrar-General's Department in Great Britain that it will be possible to largely dispense with the use of rules of preference in tabulating causes of death within a few years, as their experience indicates that physicians are becoming increasingly familiar with the purpose and use of the medical statement to present their opinion as to the cause to which the death should be attributed in medical records.

SUMMARY

In Ontario in 1935 diabetes was mentioned on 687 death certificates. Through an enquiry made to physicians, information was received concerning 602. Of this number, 456 were classified officially to diabetes. Information was supplied by the physician concerning the use of Insulin and the co-operation of the patient, and the physicians were requested to express their opinion as to whether the death should be attributed to diabetes in medical records.

Of the group of 456 persons whose deaths were officially classed as due to diabetes and concerning whom data were supplied, 321 (70 per cent.) used Insulin at some time; 112 did not use Insulin; and no information was supplied concerning 23. In a previous survey in 1929-30, 56 per cent. had used Insulin at some time. Of the group of 321 persons who used Insulin, 123 used Insulin regularly (at least three months before death); 85 used Insulin only in the terminal illness; 48 used Insulin regularly but discontinued its use some time before death; and 65 used it irregularly. Of the group of 112 persons who did not use Insulin, 65 did not require it, according to the physician's report.

Of the 456 patients whose deaths were classed to diabetes, 270 were under medical supervision. Forty-five received medical care only at the time of death, and 75 received no medical care. Of the group of 270 receiving medical care, less than one-half were said to have co-operated in their treatment.

Based on the expressed opinions of the certifying physicians in the questionnaire and on the form of the medical statement on the death certificate, comparison was made between the classifications based on these and by official practice. Of the 602 deaths in which diabetes was mentioned and for which reports were received, 456 were attributed to diabetes according to official practice. When classified according to the form and order of the physician's statement of the cause of death, there was agreement with the official classification in 253. Based on the physician's expressed opinion (answer to specific question), 291 deaths would have been classified to diabetes. Frequent disagreements were found between the physician's opinion and the cause as stated by him on the certificate. Classification based on the physician's opinion as to the cause of death as expressed in the form of the statement of the cause on the medical certificate of death, is the ultimate objective in the tabulation of vital statistics. Rules of preference, when two or more causes are given, are necessary until physicians thoroughly understand the use of the death certificate for presenting clearly their opinion as to the cause of death.

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THE Peace River Health Unit serves that portion of the Peace River country which lies within British Columbia. The district, which comprises an area of 7000 square miles, is separated from the rest of the province by the Rocky Mountains. To the north and south the country is heavily wooded and sparsely inhabited. On the east, however, it borders on the district of the same name in the neighbouring province of Alberta, to which it has access by road and rail.

The Peace River crosses the district from west to east, receiving in its course numerous large and small tributaries. The country for the most part is rolling but here and there it is deeply scarred where the rivers have cut down through the soil to levels 1000 feet below the surrounding country. The district itself is still very much a land of pioneers for it is only in recent years that the homesteader has displaced the trapper and opened up large tracts of fertile land for purposes of agriculture. Many of the earlier settlers are now well established and the frontiers are being pushed back gradually as new districts are opened or as the older ones are supplied with roads and access to markets.

The climate of the Peace River country is on the whole very pleasant and invigorating. The altitude for the most part varies between 2000 and 2500 feet above sea level. Bright days are the rule at almost all seasons of the year with long hours of sunshine in the summer months compensating for the short days of winter when temperatures of 50° to 60° below zero are not uncommon for short periods of time.

Distances travelled in the course of a year in carrying out the duties of the health unit are very considerable. Communities are in many instances widely separated and travel is not infrequently difficult because of adverse weather conditions. Roads may become impassable for cars within a period of a few hours at any time of the year. In spite of such difficulties members of the staff drove more than 45,000 miles by car in 1938 in addition to smaller distances travelled by sleigh, wagon and boat.

Estimates of population made by local government officials varied so greatly (8000 to 14000) that an enumeration was carried out in the late months of 1938 under the supervision of members of our staff by the teachers and school children in each of the 56 school districts and adjacent unorganized territory. According to the figures which we have obtained the population is approximately 7600. The infant and preschool population totalled 1065 and the school-age population was found to be 1432. In support of our estimate

is one of 8000 made by the Provincial Assessor, and that of 9000 provided by the Provincial Police for the very much larger territory under their jurisdiction.

Organization

The Peace River Health Unit was organized by the Provincial Board of Health in the autumn of 1935 to complement the formation at that time of the Peace River Educational Administrative Area by the Provincial Department of Education. The staff consists of a director, four full-time public health nurses, and two part-time nurses. For practical purposes the area is divided into four parts, each with fourteen school districts in charge of a resident nurse. Two of the most isolated districts are in addition served by part-time nurses.

In the development of the services provided by this health unit an attempt is being made to reach the objective which will make available to all residents of the district a full program of activities in public health and preventive medicine.

It was recognized from the beginning that in a district where people have few contacts and the majority live in comparative isolation extensive education would be required as a basis for community progress and as a preliminary to the introduction of the various types of health activities. Public health education accordingly has been carried out at every opportunity, through the schools, in the course of home visits, and by means of addresses given at meetings held for a variety of purposes throughout the district. The time and energy spent on this phase of the work has borne fruit and the efforts of the staff are being increasingly directed towards meeting the demand which has been created for the services.

Progress, however, is necessarily slow. The population of the district is so widely scattered that only a small number of people can be reached at any one time, and the size of the territory and the difficulties of travel handicap still further any efforts at the speedy realization of our objective. In deciding what services should receive initial attention, therefore, consideration was given to the immediate requirements of the district itself, and an attempt made to provide facilities to meet the most urgent needs of the community as a whole.

SCHOOL MEDICAL SERVICES

In our territory there are 56 schools having an enrollment of 1316 children. In the course of the year all children attending school are given a medical examination by the director of the unit. Particular attention has been given to the prevention and correction of defects in this section of the population and special arrangements have been made for this purpose.

Diseased tonsils and adenoids are removed by the local physicians, who are paid directly by the director of the Peace River Educational Administrative Area. He in turn is reimbursed by the parents responsible for the debt, in cash or, as is more often the case, in work or supplies for the schools under his charge. This arrangement makes it unnecessary to take into consideration the economic background of the families concerned and makes possible the correction of defects in many children who otherwise would go unattended.

Under this plan 200 school and preschool children have had their tonsils and adenoids removed within the past two years.

Arrangements similar to those for removal of tonsils and adenoids have been made for the payment of the cost of supplying glasses for children found to be suffering from defects of vision. Glasses were provided for 22 children in 1937 and for 40 in 1938.

Each year approximately 15,000 chocolate-coated iodine tablets have been provided at cost price for school children in various parts of the district for the prevention of goitre. Where use of the tablets was precluded because of cost, tincture of iodine has been supplied free of charge.

Dental Clinics

Free dental clinics have been provided each year for the past four years for the children of the whole district under the joint auspices of the Provincial Board of Health and the local educational authorities. Information regarding the work performed is provided in table I.

TABLE I
SCHOOL DENTAL SERVICES, PEACE RIVER BLOCK

	1935	1936	1937	1938
Patients treated.....	1091	1002	1256	1308
Preschool children treated.....		32	221	265
Total number of fillings.....	1854	1089	1445	1626
Number of extractions.....	1200	592	367	332
Operations per child.....	2.89	1.67	1.44	1.49
Fillings per child.....	1.7	1.08	1.15	1.24
Extractions per child.....	1.1	0.59	0.29	0.25

The practice of dentistry among school children in this district has become to a large extent preventive dentistry. The excellent state of the teeth of the children has been remarked upon frequently by newcomers to the district. Most recent of those competent to judge is a member of the staff, who in the Public Health Nurses' Bulletin issued by the Provincial Board of Health has stated: "To one who has worked among children at the Coast it is a continual source of amazement to see children with sets of perfect or almost perfect teeth; the result in part of regular dental supervision."

PUBLIC HEALTH NURSING SERVICE

Each member of the nursing staff visits each school in her district at least once a month throughout the school year. Routine duties are carried out in the course of these visits and special attention is given to any individual requiring it. The nurses also are responsible for the supervision of infant welfare in the home, for the organization of clinics, and for the arrangements with parents for the correction of defects in school and preschool children. In addition they are subject to emergency calls and not infrequently are required to transport persons who are seriously ill considerable distances to the nearest hospital. Great credit is due the members of the nursing staff for the carrying out of their duties under conditions which are at times most trying.

ADULT WELFARE

The majority of people in the Peace River district live many miles from the nearest doctor or hospital and few persons will make the long slow trip to town to consult their physician until driven to do so by serious illness or acute pain. As a consequence much chronic and preventable illness is found in members of the adult population who not infrequently are quite willing to seek treatment once a diagnosis, even though it be only a temporary one, is made. In the course of visits to the outlying districts especially arrangements are usually made for examination by the health officer of the adult members of the community who require medical advice. Those persons found to be in need of medical and hospital care are referred to their own physician and not infrequently, lacking the means of transportation themselves, they are taken to and from the hospital by a member of the health unit staff. The need for this type of work is apparent and efforts have been made to provide for it on as large a scale as possible. During the past year arrangements were made through the health unit whereby the practising physician of Fort St. John now visits periodically the isolated community of Cecil Lake. It is hoped that before long similar arrangements can be made for the provision of regular medical services for other outlying communities.

IMMUNIZATION PROGRAMS

Considerable time has been spent each year on programs for immunization against various preventable diseases. Information regarding various phases of this work is given in table II.

TABLE II
NUMBER OF SCHOOL AND PRESCHOOL CHILDREN WHO HAVE RECEIVED PREVENTIVE TREATMENTS AGAINST DIPHTHERIA AND SMALLPOX

District	Popu- lation	School Children				Infant and Preschool Children				
		Smallpox		Diphtheria		Popu- lation	Smallpox		Diphtheria	
		No. Vacc.	Per cent.	No. Tox'd	Per cent.		No. Vacc.	Per cent.	Given Tox'd	Per cent.
Central.....	465	257	55	276	59	297	128	43	157	53
West.....	197	111	56	132	67	179	91	51	93	52
East.....	261	221	85	217	83	218	126	58	115	53
North.....	393	257	65	307	78	371	156	42	137	37
Total.....	1316	846	64	932	70	1065	501	47	502	47

Typhoid and Paratyphoid Fevers

In 1938 clinics for immunization against the typhoid-paratyphoid group of infections were held in 17 of the most densely populated districts. Adults particularly were urged to attend. In all 1087 persons received the full course

of treatment, 72 of whom were older preschool children. Of all those treated 59 per cent. were adults and 75 per cent. of these were under 45 years of age. Further details of this work are given in table III.

TABLE III
IMMUNIZATION AGAINST TYPHOID-PARATYPHOID FEVERS

District	No. of Clinic Centres	Popu- lation	Adults		School Children		
			Number Treated	Per cent. Treated	Popu- lation	Number Treated	Per cent. Treated
Central.....	7	1200	239	20	350	248	71
East.....	8	648	231	36	199	174	87
West.....	2	139	70	50	53	53	100
Total.....	17	1987	540	27	602	475	79

Scarlet Fever

Within the past fifteen months immunization against scarlet fever has been carried out in a number of the larger schools in the district where spread of the disease, should it occur, might be particularly difficult to control. In all approximately 200 school children have received the full series of preventive treatments.

SANITATION

A number of factors have contributed to make the control of sanitation in this country very difficult and at the same time very important. Water for domestic use in adequate amounts is so difficult to obtain that except for two or three communities where it is sold from door to door by the pail or barrel it is as a rule obtained from "scoop-outs" or dams built for the holding of surface water. In the construction of these dams inadequate consideration has been given to the protection of the water from contamination from animal or human origin and time and again acute enteritis has been traced to the drinking of untreated water from these sources.

Villages have been built after the manner of frontier communities with little or no thought given to the control of sanitation. Open privies originally of the pit type were permitted to become surface privies and to constitute a grave menace to the health of the communities tolerating them. In the summer and fall the fly nuisance and failure to protect food and drink in homes and restaurants alike added to the danger of an outbreak of one of the diseases of the typhoid group of infections. It is not surprising therefore that each year until 1938 an epidemic of diarrhoea swept through the whole district, leaving in its wake in a number of instances very grave complications. Last year much time and effort was spent by the staff of the health unit on problems related to sanitation with such apparent success that for once the district was comparatively free of the infection.

As part of the effort, a number of articles dealing with sanitation were

published in the local newspaper, and mimeographed sheets giving detailed instructions for chlorination of water and control of sanitation of the home environment were distributed at every opportunity. Meetings of various organizations throughout the district were addressed by invitation or at our own request and instruction in sanitation was given in the course of visits to the homes for any purpose whatsoever.

With few exceptions all water to be used for drinking purposes was condemned unless disinfected by an approved method. Water-chlorination outfits were made available to all who would use them.

The complete absence of control of sanitation throughout the district provided such unusual facilities for the spread of enteric infections that widespread immunization against the typhoid-paratyphoid group of diseases was considered essential both as a temporary safeguard against disaster and as a means of emphasizing the need for drastic improvement in these matters. Clinics for immunization against these diseases proved to be surprisingly popular and requests for the treatments were received from many interested communities. Details of this phase of the work have already been presented in discussing the program of immunization.

In the villages persons responsible for creating or tolerating nuisances were required to have these attended to in a satisfactory manner within a reasonable period of time. In Dawson Creek, the largest village, we were able to have a by-law for the control of sanitation passed and enforced. The by-law provided for an immediate change from the pit and surface privy to the pail type, with scavenger and garbage service compulsory for all residents of the municipality. In addition funds were voted for the construction of a disposal tank on a site acquired for the purpose and providing facilities ensuring its successful operation.

A marked improvement in control of sanitation is already apparent in many parts of the district. While much remains to be done it is possible that the most difficult task already has been accomplished, namely, that of arousing the whole community to the need and obtaining its hearty endorsement of this work.

The budget for the year 1938 was \$14,003.58, representing a per caput expenditure of \$1.84. The income was received from the following sources: the Provincial Board of Health, \$8116.08; the Provincial Department of Education, \$3260.00; the Rockefeller Foundation, \$2000.00; and the Local Educational Administrative Area, \$627.50. Expenditures were as follows: salaries, \$9502.50; operating expenses (cars, office, drugs), \$3601.88; dental clinics (salary, travel, supplies), \$899.20.

Plans for the future provide for maintenance and further extension of the present services for which arrangements have already been made. During the present year it is hoped to be able to devote more time to infant and preschool welfare. Clinics for immunization against typhoid fever will be extended to districts not reached last year and the program for control of sanitation will be continued on as wide a scale as possible. In addition arrangements have been made with the Division of Tuberculosis Control of the Provincial Board of Health for a survey to be carried out in this district starting in July.

The Campaign against Ragweed

H. B. ANDERSON, M.D., F.R.C.P.(C.)

Toronto

LEADING authorities have estimated that from three to five per cent. of the people of the United States and Canada are hypersensitive to windborne pollens; in badly infested areas the percentage is much higher and has been rapidly increasing in recent years. Over three millions of the population are victims of late summer and early autumn hay-fever, more than eighty per cent. of the cases being due to the pollens of ragweed. The number and severity of cases are proportionate to the degree of concentration of the causative pollens in the air, and it is important to remember that hay-fever sufferers are more susceptible to perennial head "colds" as well as to sneezing and coughing induced by house dust and other irritants. The increase of fall hay-fever and other allergic respiratory diseases during the past forty or fifty years has been coincident with the enormous spread of ragweed. The great American ragweed belt, at one time limited to the northern United States from the Mississippi to the Atlantic, has spread westward and southward, and has invaded adjacent Canadian territory and New England.

Mature ragweed plants produce from five to fifty thousand seeds and these are scattered by floods and freshets, motor traffic, insects, animals, farm machinery, railways, impure seed-grain, fodder and manure. Seeds may lie dormant in the ground for years and spring up when the soil is freshly broken. Deforestation, drifting of soil, floods, etc., all help to spread ragweed and other noxious weeds; they do not grow upon properly cultivated soil or well-wooded land. Ragweed should be pulled or uprooted early in the season or cut toward the end of July or early in August, before pollination of the flowers and ripening of the seeds, and again in the autumn before ripening of the second crop, so as to forestall a more abundant growth during the following year. After too early a first cutting, the ragweed plant spreads out to grow into a more prolific seed-bearer. Ragweed pollens may be carried for twenty-five miles or more, and hundreds of tons of pollens are thrown into the air from single infested areas. In 1925 Durham estimated that over 1200 tons of ragweed pollens were produced on the waste land of Chicago alone.

Over thirty per cent. of hay-fever patients eventually suffer from asthma and many develop sinus disease, bronchitis, bronchiectasis, or other respiratory complaints. The opinion is widely held by medical authorities that acute infections of the nose, throat, and respiratory passages are spread by "carriers" of the infection. Hay-fever or other condition causing sneezing, coughing, etc., releases the mechanism by which the infected droplets from the nose and throat are carried into the air. The common cold, measles, diphtheria, scarlet fever, and poliomyelitis are diseases believed to be spread by droplet infection. A person suffering

from an infective disease of the respiratory tract, therefore, becomes more infectious if, at the same time, he is suffering from a common cold or other condition causing sneezing and coughing. For this reason, the importance of preventing a disease capable of spreading droplet infections should enlist the support of mothers and especially of women's organizations.

The economic importance of weed control is strikingly illustrated in Report 27, 1932, issued by the National Research Council of Canada, which states that, on a conservative estimate, there is a crop loss of eighteen per cent. in Western Canada, due to noxious weeds. This in itself represents an annual monetary loss for the Dominion far exceeding that of the National Railways.

The great tourist traffic and summer resort business of the Province of Ontario is being menaced by the spread of hay-fever-producing weeds and the diseases incident thereto, a conclusion so obvious that it requires no emphasis. Recognizing this danger, the public health authorities and other interested bodies in our sister province of Quebec, the State of New York, the New England States and elsewhere, have taken action to protect highways, railway allowances, and summer resorts from ragweed infestation, which otherwise will destroy what hitherto have been havens of refuge for thousands of hay-fever victims seeking climatic relief. Boards of trade, chambers of commerce, municipal authorities, financial, insurance, agricultural and other bodies interested in the economic welfare of the province should awaken to the danger and assist in measures for its control.

CONTROL MEASURES

A year ago the Province of Ontario initiated and directed a vigorous campaign against ragweed and other disease-producing weeds, and a commendable beginning was made by the City of Toronto, Forest Hill Village, and other municipalities toward their eradication. The effect is readily apparent in the smaller crop appearing this year.

The campaign of the Provincial Government of Ontario includes the rigid enforcement of the Weed Control Act. It recognizes the public health aspect of the problem by providing for the collaboration of the Department of Health and the Department of Education with the Department of Agriculture, under which the Act is administered. This is a departure of great importance, for the hitherto-prevailing view that noxious weed control was a matter of agricultural concern only, undoubtedly led to neglect by cities, towns and villages, which consequently have become widely infested. The control of disease-producing weeds on highways, roadsides, waste lands, railway allowances, golf links, and wherever land is newly broken, is not so much a matter of agricultural as a public health responsibility, and it is hopeless for urban centres to expect relief from hay-fever unless offending weeds are eradicated along highways and other infested areas in the surrounding country.

The collaboration of the Department of Education in the government's campaign is another departure with possibilities of far-reaching importance. Everyone desirous of giving effective help should first be able to recognize

ragweed on sight, something which perhaps not one in a hundred is able to do at the present time. Ragweed plants are rather pretty when young, looking not unlike French marigolds, and at times actually may be seen on sale in the public markets or nurseries.

As autumnal hay-fever and its associated diseases may be controlled by the eradication of ragweed and other hay-fever-producing weeds, it is reasonable to expect that the victims of these distressing complaints will make every effort to further a campaign with that end in view.

Public-spirited, intelligent, law-abiding citizens should not have to suffer on account of the neglect or carelessness of selfish neighbours who permit disease-producing weeds to flourish on their premises. Weed inspectors have an important duty to perform in bringing delinquents to time and seeing that the law is enforced.

An educational campaign should familiarize teachers, pupils, Boy Scouts, Girl Guides, and other groups with the appearance of the weed at different stages of its growth; they should know its distribution, time of pollination and ripening, the best means of eradication, and the various diseases with which it is associated. Our universities, colleges, high schools, and other educational bodies should recognize the interesting field of knowledge and observation which may be opened up regarding plants, flowers, and weeds in general; people in increasing numbers thus will not only become weed-conscious but will be introduced to an interesting branch of the natural history of our country.

Federal, provincial or municipal boards of health should undertake systematic and properly controlled counts of the pollens contaminating the air of large cities and other selected areas, over a period of years, accompanied by field observations. Unfortunately at the present time there is lack of accurate knowledge on many points concerning hay-fever which could readily be obtained if the provincial board of health would provide for the reporting of cases for a few years. The incidence of the disease in the general population, the date when symptoms first appear (this varies with latitude and perhaps from year to year), family or personal history of hay-fever or other allergic manifestations, predisposition of hay-fever patients to other diseases, are matters about which we should know more.

Carefully prepared descriptive literature with charts and pictures should be distributed, and the weeds themselves should be demonstrated to teachers, school children, and policemen; at golf clubs, agricultural fairs, and by exhibits in public places. I am informed that such an exhibit is being provided for at the Canadian National Exhibition, Toronto, this fall, thus setting an example which should be followed in other places.

The noxious weed problem in general is inter-related with deforestation, floods, soil erosion and drifting, as well as with grasshopper and kindred pests. It should be recognized as a matter of major importance, urgently calling for a broad-visioned constructive policy for the conservation of our natural resources, which would afford useful employment for large numbers of jobless Canadians to replace the present purposeless and demoralizing expenditure on unemploy-

ment relief. An eminent American authority, Wodehouse, states that "truly, hay fever is a man-made disease, the by-product of a shiftless and unorganized civilization. . . . Hay fever is essentially a nation-wide punishment for our failure to adopt a sound conservation policy."

The control of ragweed and other noxious weeds will require years of well-organized effort, in which the co-operation of all the provinces as well as of the adjacent American states will be necessary if satisfactory results are to be hoped for. The organization of a Canadian Hay Fever Prevention Association, with provincial branches, would enable the public to exercise their influence most effectively. In order to avoid unnecessary multiplication of associations, it would be better to organize under some existing body such as the Health League of Canada, the Canadian Public Health Association, the provincial health officers' association, or other health organization capable of assisting in a great public service.

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PUBLIC HEALTH EDUCATION

IN this issue of the JOURNAL Professor Roy Fraser outlines what is being accomplished in Mount Allison University in bringing to university students in arts and science the knowledge of health and in outlining their part in the community's undertakings to improve the state of the public health. Professor Fraser was the first to introduce into the university curriculum in Canada a systematic training in personal and community health for students in the faculty of arts, and to make such a course a requisite for a degree. It is not a new venture: for twenty years such a course has been conducted at Mount Allison University. About 2000 students representing 200 communities have taken the course. One of the most valuable features is the requirement that a health survey of his own community be made by each student during the summer vacation, thus obtaining first-hand information.

Those who are privileged to have a university education should be equipped to lead in their communities in all matters relating to the general welfare. No matter is of greater importance than that of safeguarding the community's health. Such community interest, however, must be based on knowledge and such knowledge can be best obtained as part of the university training. Professor Fraser has opened a wide field for thought and action. The introduction of similar courses, as comprehensive as that which has been successfully conducted at Mount Allison, would be very difficult in the larger universities. This is no reason why consideration of the matter should be postponed. In faculties of medicine and in certain other courses instruction in hygiene and preventive medicine is included in many universities. Students in the faculties of arts and science, however, do not generally receive instruction in this subject. A student may graduate from a university ignorant of the simplest facts concerning tuberculosis and the other important communicable diseases, nutrition, and the essentials of physical and mental health. From the community standpoint, he may be equally ignorant of the services rendered by the medical officer of health and his staff, and by voluntary health agencies and other groups engaged in community welfare.

The increasing appreciation of the importance of health education is evidenced by the steadily increasing attendance of school teachers in Ontario

at the summer course in health education provided by the Department of Education with the co-operation of the Department of Health. What was started in 1933 as an experiment has resulted in the establishing of a highly successful summer school for primary school teachers, making possible an adequate presentation of this subject to their classes. The provision of the course reflects the excellent co-operation which exists between the departments of government concerned, and the success of the effort is due in no small measure to the leadership of Dr. J. T. Phair, Chief Medical Officer of Health of the Province. Ten years ago health occupied a very minor place in the curriculum of the elementary school in Ontario. No handbook or manual was available to the teacher to aid him in giving health instruction. No course of instruction was offered. The course has attracted international interest and an outline of it was recently published by the Metropolitan Life Insurance Company as one of the School Health Monographs. The "Handbook of Suggestions for Teachers in Public and Separate Schools", which was first issued in mimeographed form by the directors of the course, was made available to the public last summer. More than one thousand teachers have now had the benefit of this course of instruction.

The growing recognition of the importance of public health education is evidenced, too, by the provisions made by various departments of health. The Department of Pensions and National Health established last year a Division of Publicity and Health Education. This step promises to have far-reaching effects in the development of health education in Canada. The division is undertaking the preparation of popular health literature. A feature of the work of the division has been daily brief radio announcements. These announcements have included the statement that the Department of Pensions and National Health would be pleased to supply information and, as a result, the Division has been flooded with requests for information on a wide variety of health subjects.

The national voluntary health agencies are doing excellent work through the various channels open to them. The Health League of Canada makes available each week a radio talk which is presented over thirty-eight stations and has developed a most extensive press service, supplying four articles a week to more than 500 newspapers.

On every hand there are evidences that the public is becoming more and more interested in health. Because of this increased interest there is to-day a greater opportunity for the medical officer of health to give leadership to his community in all matters relating to health. Since 1928 the Canadian Public Health Association has concentrated its efforts in bringing to those professionally engaged in public health work the progress that is being made in preventive medicine in all its branches. In the program of health education, the Section of Public Health Education is desirous of being assistance to health officers and others who are engaged in health teaching.

REPORT OF THE ASSOCIATION'S WORK DURING 1938-39

(Part IV)

REPORT OF THE SUBCOMMITTEE ON STILLBIRTH REGISTRATION AND CERTIFICATION

(COMMITTEE ON THE CERTIFICATION OF CAUSES OF DEATH)

THE work of this subcommittee to date has been concerned chiefly with the institution of a single standard form for the registration and certification of stillbirths in Canada. In its second annual report, the Committee's final recommendations on this subject were presented. These recommendations included the final draft of a single form for the registration of stillbirths, which was submitted as an acceptable minimum standard for national use. The early introduction of such a form throughout Canada was urged, and special attention was directed to the ancillary medical questions. The Committee's opinion was that the questions relating to cause of death on any national standard stillbirth certificate should be closely comparable to those on the standard death certificate. Stress was laid on the provision of sufficient explanatory notes and examples for the guidance of physician, informant, undertaker, and registrar. All the recommendations made by the Committee were based on the findings in an experimental trial of the tentative form placed before the Section in June, 1937, and on researches into existing Canadian practice and opinion as well as developments elsewhere (*Canad. Pub. Health J.*, 28:606, 1937).

SECTION I—PROGRESS WITH THE NEW STILLBIRTH CERTIFICATE

Since the special conference on Vital Statistics held in Ottawa in May, last year, definite progress has been made toward the introduction of a uniform standard certificate for the single registration of stillbirths in Canada. Alberta introduced the form in January, 1939. In Manitoba, the new form is now in the field and will be in general use from July 1st, 1939. In Nova Scotia and New Brunswick the new certificate is expected to be released within a few weeks. As intimated at the conference last year, British Columbia is not introducing the form at present. In the remaining four provinces, the Bureau is awaiting further instructions, the new certificate being in proof form. It is anticipated that the registration and certification of stillbirths by the use of a single form incorporating the recommendations made by this Committee last year, will be an accomplished fact by January, 1940.

SECTION II—UNIFORMITY IN STILLBIRTH STATISTICS

The International Conference (Paris, 1938) suggested that each country should state in a footnote the definition of a stillbirth applied in its statistics, and

Presented at the twenty-eighth annual meeting of the Canadian Public Health Association, June 12-14, 1939.

made reference again to the definition drawn up in March, 1924, for the purposes of achieving international comparability, by a special committee of the League of Nations Health Organisation (Dr. Duffield, Dr. Hedren, Dr. Eardley Holland, M. Huber and Dr. Ney). It is to be noted that the adoption of this definition was recommended in 1929 by the Committee of Statistical Experts of the League of Nations, and in September, 1936, by the International Institute of Statistics, after further study by Dr. de Berandinis. This definition has, of course, been followed in Canada since 1932 following upon a recommendation to this effect made through a Committee of this Section.

The Committee takes this opportunity, however, of emphasizing the importance of acting on the above recommendation of the International Conference. Whatever statistics on stillbirth are shown in official returns it is desirable that such tables be limited to deaths among stillborn (viable) foetuses by definition. If such tables include, in any case, deaths of foetuses which are ordinarily not considered viable (under 28 weeks' gestation), it is similarly urged that this be clearly noted.

The International Conference recommended, too, that countries using special stillbirth certificates, insert questions on the forms to determine time of foetal death in relation to birth. The new Canadian form, of course, already makes such provision.

SECTION III—STILLBIRTH NOSOLOGY

Since the Committee's second report was presented, the Fifth Decennial Revision of the International List of Causes of Death has been completed. The Commission entrusted with this task drew up a "Nomenclature of Causes of Stillbirth". This list is markedly different from the tentative one suggested at the last decennial conference in 1929, which was based on time of death in relation to labour. It would appear that this change signifies the Commission's opinion that time of death is not a satisfactory basis for major grouping, an opinion expressed by this Committee in its first annual report.

The following is the list of causes drafted by the Fifth International Conference, 1938:

I. Stillbirth Caused by Disease in or Accident to the Mother.

1. Chronic disease in the mother.
 - (a) Syphilis.
 - (b) Other* (tuberculosis, chronic malaria, chronic nephritis, chronic heart disease, diabetes mellitus, chronic alcoholism, chronic occupational poisoning, etc.).
2. Acute disease in or accident to the mother.
 - (a) Toxaemia during pregnancy (albuminuria, eclampsia).
 - (b) Other* (retroplacental haemorrhage, detachment of normally inserted placenta, etc.).
3. Over-exertion.
 - (a) As a result of overwork.
 - (b) Other.
4. External violence:* abdominal trauma, trauma to other parts of the body.
5. Others.

II. Anomalies of the Foetus, Placenta or Cord.

6. Congenital malformations incompatible with life.
7. Vicious insertion of placenta.
8. Other anomalies of the placenta and cord.

III. Death of the Foetus by Injury or Other Causes.

9. Abnormal presentation of the foetus.
10. Malformations of pelvis (contracted pelvis).
11. Prolapse of the cord.
12. Prolonged labour or uterine inertia.
13. Obstetrical operations (without indication as to the object of the operation).
 - (a) Operations causing mutilation.
 - (b) Other obstetrical operations.
14. Other causes* (malformations of genital organs, pelvic tumours, ruptured uterus, etc.).

IV. Stillbirths Due to Other Causes.

15. Other or unspecified causes.

*Each of these causes might constitute an optional subdivision.

The similarity in content of this list and the one drafted for use in an Ontario study in 1935 (Canad. Pub. Health J., 28:22, 1937) and to which reference was made in the Committee's first report, is interesting because one can be fitted into the other by a simple rearrangement of the rubrics. There appears to be little to be gained by attempting to *group* causes either in relation to time of death or the presumed general origin or nature of the causes involved. The similarity, clinically and pathologically, in the factors responsible for death in stillborn (viable) foetuses and infant deaths during the first 24-48 hours of life (especially), suggests that unless the classification adopted adheres strictly to what is desired, namely the underlying clinical or pathological condition in the mother, foetus or placenta responsible for death, little use will be able to be made of the data compiled. The Committee's opinion, therefore, is that a stillbirth nosology should be so drafted as to be (1) clinically acceptable (theoretically and practically), (2) adaptable for inclusion directly into the main body of the International List itself, and (3) satisfactory for use also in neonatal mortality statistics.

Scientific needs can be *largely* but by no means completely served by attributing each stillbirth to a single cause. Knowledge of both the "cause of death" (as defined for statistical purposes) and the consequent factors in the foetus, are important. However, birth injury and other "consequent" factors may arise in one of several different ways. Hence, classification of a stillbirth or a neonatal death to such cause, serves but a limited purpose. At the same time, provision for the recording of such contributing or determining factors *should be made* in any detailed classification, choice being *always* governed by clinical criteria and practice in keeping with the fundamental concepts of modern vital statistics.

SECTION IV—STUDIES BY THE COMMITTEE

During its first year, the Committee reviewed various schemes for the classification of the causes of stillbirth. As a result of its investigations, the

opinion was expressed that a satisfactory stillbirth nosology should be "logical in plan, based on clinical and practical needs and reflect existing scientific knowledge and opinion" in so far as possible. Any list should, furthermore, be consistent in principle with basic needs which such statistics are attempting to fill.

This year the Committee undertook to study further the confidential returns of stillbirth submitted to it during 1938 in the course of a trial of a proposed certificate for national use. Each return was examined and the underlying cause for statistical purposes selected in the light of all data recorded and without the application of any conventional rulings. In the majority of instances, the cause selected was the last entry under section I of the certificate, as was to be expected in view of the finding reported last year that "in 82 per cent. of the returns, the medical statement of cause of stillbirth was satisfactory."

The cases were then tabulated using the list adopted for the Ontario study conducted by a member of this Committee in 1936 (Canad. Pub. Health J., 28:22-31 and 282-290, 1937). This nosology is essentially that originally used by Holland and subsequently expanded by Holland and Lane-Clayton (Med. Res. Council, Special Report No. 109, 1926). The group of cases studied was enlarged from last year by late returns received by the Committee. The cases were also classified by period of gestation, time of death in relation to labour, nature of delivery and occurrence of birth injury.

The detail of the list employed in this study is as follows:

THE CAUSES OF STILLBIRTH

A. *Complications of Labour*

This title includes the following subtitles:

1. *Abnormal presentation*

This title includes cases of abnormal presentation with prolonged or difficult labour, with or without instrumental delivery. Breech, face, brow, persistent occiput posterior, and transverse presentations fall into this category.

2. *Contracted pelvis*

This title includes cases of contracted pelvis with spontaneous labour (with or without instruments or Caesarean section) and contracted pelvis cases in which labour was induced. It is obvious that contracted pelvis might exist and yet not be a factor in foetal death due to small size of foetal head, etc. Hence cases were classed in this group only when there was evidence that the contracted pelvis was the primary cause of death of the foetus.

3. *Cord complications*

This title includes compression of cord in labour, knotting or coiling of cord about foetus, prolapse of cord, rupture of cord, thrombosis of cord. Cases were classed here only when no primary factor could be determined which was likely to cause such cord complication.

4. *Difficult or prolonged labour*

This title includes cases of prolonged or difficult labour, with or without instrumental interference, in which abnormal presentation did not occur and in which no indication of such maternal factor as contracted pelvis was evident.

5. *Dystocia of indefinite or other cause*

This title includes dystocia due to excessive size of foetus, including postmaturity, dystocia due to scarring of the cervix, and others.

6. *Normal labour*

This title includes cases in which no abnormality in the labour and delivery was noted to explain either asphyxia or birth injury recorded.

7. *Others*

This title includes precipitate labour, premature rupture of membranes, and others comprising Bandl's ring, prolapsus uteri, ruptured uterus, stenosis of cervix, etc., with in some cases operative interference but with no indication that dystocia was a factor.

B. *Antepartum Haemorrhage*

This title includes:

1. Accidental haemorrhage
2. Accidental praevia
3. Antepartum haemorrhage not specified

Under accidental haemorrhage are included the terms premature or early separation of placenta, detached placenta, and abruptio placentae.

C. *Toxaemias of Pregnancy*

This title includes:

1. Albuminuria (toxaemia) of pregnancy
2. Eclamptic toxaemia
3. Nephritic (including hypertensive) toxaemia

The rubric albuminuria of pregnancy includes low reserve kidney, albuminuria of pregnancy not specified, and like terms.

D. *Syphilis***E. *Placental Disease***

This title includes relative placental insufficiency (Holland), excessively small placenta, fibrosis of placenta, infarction (excessive) of placenta (red or white), and other placental abnormality. Cases were included here only when the sole primary factor responsible for foetal death appeared to be the placental disease.

F. *Foetal States including Malformations*

This title includes:

1. Anencephalus
2. Hydramnios
3. Hydrocephalus
4. Monstrosity or maldevelopment (unspecified)
5. Multiple pregnancy
6. Spinal bifida (alone)
7. Others

The rubrics anencephalus and hydrocephalus may be subdivided into three: (a) without other malformation, (b) with spina bifida, and (c) with other malformations. Under hydramnios were included only those cases in which it was the sole clinical feature. The rubric "Others" includes craniorachischisis, etc.

G. *Maternal Disease*

This title can be subdivided according to the major divisions of the International List with the exception of diseases peculiar to pregnancy, childbirth and the puerperal state, congenital malformations, and diseases peculiar to early infancy. Hereunder were included only those foetal deaths primarily attributable to maternal disease other than specified elsewhere.

H. *Prematurity*

Included hereunder are only those foetal deaths in which a statement of prematurity as "cause" was made by the physician and where there was no evidence of a primary factor responsible for the prematurity.

I. *Cause Unknown or Undetermined*

Here are included cases specified as "unknown" by the physician, in which no further clue as to etiology was evident.

J. *Inadequate Data*

This title includes cases which were not stated as "cause unknown" but in which data did not permit classification.

For convenience, the findings in the cases reviewed are presented in consolidated form. Table I gives the distribution of the cases by period of gestation at birth and cause of death.

The distribution of causes is similar, with one exception, to the findings in the Ontario study, 1933. In the above data, the number of stillbirths attributed to placental states is somewhat high, perhaps partly due to incomplete certification.

TABLE I
CAUSES OF STILLBIRTH BY PERIOD OF GESTATION AT BIRTH
CONFIDENTIAL STILLBIRTH RETURNS, 1937-38

Cause of Stillbirth	Period of Gestation in Weeks						Total	
	28-31	32-35	36-37	38-40	Over 40	Not Stated	Number	Per cent.
Complications of Labour..	5	10	16	95	17	5	148	33.0
Antepartum Haemorrhage..	15	12	10	18	0	0	55	12.3
Toxaemias of Pregnancy..	17	17	17	14	1	1	67	14.9
Syphilis.....	2	1	2	2	0	0	7	1.6
Placental Disease.....	7	8	2	8	4	0	29	6.5
Foetal States.....	9	12	4	27	2	3	57	12.7
Maternal Disease.....	11	6	3	6	1	1	28	6.2
Prematurity.....	2	0	0	0	0	0	2	0.4
Cause Unknown.....	4	5	3	13	0	1	26	5.8
Inadequate Data.....	7	2	5	13	1	2	30	6.7
All Causes.....	79	73	62	196	26	13	449	100.0
Per cent.....	17.6	16.3	13.8	43.7	5.8	2.9	100.0	

In Table II the cases are classified by cause (in main groups) and time of death in relation to labour and delivery.

TABLE II
CAUSES OF STILLBIRTH BY TIME OF DEATH IN RELATION TO LABOUR
CONFIDENTIAL STILLBIRTH RETURNS, 1937-38

Cause of Stillbirth	Time of Death								Total
	Before Labour		During Labour		After Labour*		Not Stated		
	Num-ber	Per cent.	Num-ber	Per cent.	Num-ber	Per cent.	Num-ber	Per cent.	
Complications of Labour.	22	10.0	88	59.9	29	55	9	31	148
Antepartum Haemorrhage	27	12.3	20	13.6	6	11	2	7	55
Toxaemias of Pregnancy..	49	22.3	12	8.2	2	4	4	14	67
Syphilis.....	6	2.7	1	0.7	0	0	0	0	7
Placental Disease.....	21	9.5	5	3.4	1	2	2	7	29
Foetal States.....	30	13.6	16	10.9	9	17	2	7	57
Maternal Disease.....	22	10.0	0	0	4	8	2	7	28
Prematurity.....	2	0.9	0	0	0	0	0	0	2
Cause Unknown.....	20	9.1	2	1.4	0	0	4	14	26
Inadequate Data.....	21	9.5	3	2.0	2	4	4	14	30
Total.....	220	100.0	147	100.0	53	100	29	100	449
Per cent.....	49.0		32.7		11.8		6.5		100.0

*But before respiration.

Such tabulation as this has definite interest clinically from the point of view of prevention. In half of the stillbirths reviewed, foetal death was reported to have occurred before labour, and a further third during labour.

Table III gives the reported frequency of birth injury by cause of death and nature of delivery. The data on birth injury were derived from the answers given by physicians to the question "Was there a birth injury?" Since in relatively few cases was an autopsy performed, such data are open to serious question as to completeness.

TABLE III
CAUSES OF STILLBIRTH BY NATURE OF DELIVERY AND INJURY AT BIRTH
CONFIDENTIAL STILLBIRTH RETURNS, 1937-38

Cause of Stillbirth	Delivery						Total
	Spontaneous			Non-spontaneous			
	Injury at Birth, as Reported						
	Yes	No	Not Stated	Yes	No	Not Stated	
Complications of Labour.....	4	37	4	20	77	6	148
Antepartum Haemorrhage.....	0	38	1	0	16	0	55
Toxaemias of Pregnancy.....	0	49	1	1	16	0	67
Syphilis.....	0	6	0	0	1	0	7
Placental Disease.....	0	19	1	0	8	1	29
Foetal States.....	0	39	4	3	11	0	57
Maternal Disease.....	0	20	2	0	6	0	28
Prematurity.....	0	1	0	0	1	0	2
Cause Unknown.....	0	19	5	0	2	0	26
Inadequate Data.....	0	25	3	0	2	0	30
Totals.....	4	253	21	24	140	7	449
	278 (61.9%)			171 (38.1%)			(100.0%)

In only 28 cases was injury at birth said to have occurred. This excludes mutilating operations on fetuses with malformations incompatible with life (anencephalus), but it is indeed low. The figure reported in the Ontario study was roundly ten per cent. In 38 per cent. of the cases, delivery was non-spontaneous, that is, either instruments, version, or Caesarean section, were employed. Only 4 cases of birth injury were reported in the "spontaneous" group.

This analysis was conducted by the Committee largely in order to determine how serious the technical difficulties might be if a clinically acceptable scheme for the classification of the causes of stillbirth was nationally employed. On the basis of the review made, and in the light of observations regarding the satisfactory nature of the Committee's returns upon stillbirths occurring at home, it would appear that there is no reason to suppose that use of the detailed list presented above, or that drafted by the International Commission, would not work quite effectively. For purposes of brevity, data from the present study were presented in consolidated form in tables I, II and III, but codification was made in detail first. For clinical use, such detailed presentation would of course be desirable and, on the basis of the Committee's own experience as well as that reported by Dr. Gagnon in Montreal and Dr. Parrot in the province of Quebec, would be at the same time, quite feasible. Classification of contributing factors such as birth injury, etc., along with each primary cause, presents difficulties because completeness of records cannot be depended upon, and fallacies may be the only result.

Momentarily, therefore, the Committee urges the careful testing out of any list of causes on a moderate scale. Further judgment or preference is reserved until the Dominion Bureau of Statistics is in a position to supply a compilation

of the causes of stillbirth on a broad scale, based on the use of the new standard stillbirth certificate.

SECTION V—RECENT DEVELOPMENTS IN THE UNITED STATES

The New United States Standard Stillbirth Certificate

The final revision of the United States Standard Stillbirth Certificate was issued early in 1939. The medical section of this certificate is reproduced here for reference:

Did child die before labor?.....	Cause of stillbirth (state only morbid conditions causing fetal death. Do not use such terms as prematurity, asphyxia, etc.):
During labor?.....	
Pregnancy, complications of.....	(a) Fetal causes.....
.....	(b) Maternal causes.....
Labor: (a) Complications of.....	I hereby certify that I attended the birth of this child who was born dead at the hour of.....m. on the date above stated. Signature..... (Specify if M.D., midwife, or other) Address.....
..... (b) Induced?.....	
(a) Was there an operation for delivery?.....	
.....	
(b) State all operations, if any.....	
(c) Did child die before operation?.....	
or during operation?.....	

The Canadian Standard Stillbirth Certificate differs from this one in having no provision for recording complications of pregnancy or labour and in using the same questions relating to causes of death as are used on the Canadian standard death certificate. The note at the head of the medical statement is an interesting feature of the American form.

Birth Registration in New York City

The Committee wishes to draw attention to developments in registration in New York City. On January 1st last, confidential certification was put into operation in the borough of Manhattan. On both birth and stillbirth certificates, a series of supplementary and confidential medical questions are included, comprising questions on length and weight of the infant at birth, complications of pregnancy, serological test for syphilis during the recent pregnancy, duration of labour, etc. These questions are extended further on the stillbirth form to include time of death in relation to labour, cause of stillbirth, autopsy, etc. A stub of each certificate containing the answers to the special medical questions is retained by the physician. Mr. Thomas J. Duffield, Registrar of Records, indicates that although more work is entailed in the completion of the new schedules, physicians are reported to have made no objection and the returns are providing a great deal of valuable information on the causes of infant and foetal mortality. The Committee is watching this experiment with a good deal of interest in view of possible developments in Canada.

Discussion

Last year the Committee drew attention to the need for a re-examination of the present ruling upon the classification of infants stated to have been born alive under 28 weeks' gestation. The Committee drew attention also to the lack

of uniformity in vital statistics legislation in Canada insofar as it relates to the registration of live births and stillbirths. Clarification of these problems is desirable and some further work in this connection appears to be in order.

During the next year it is anticipated that extended comment will be possible in respect to the experience with the new stillbirth certificate, particularly in Alberta and Manitoba. Through its members in these provinces, the Committee will be able to enquire into the response accorded the new form and the possible contribution to our knowledge which may be expected through questions included in the medical section. Further investigation will be made particularly in connection with the classification of stillbirths by cause, with a view to bringing forward the Committee's final recommendations on this subject next year.

H. A. ANSLEY, ERNEST COUTURE, EUGENE GAGNON,
C. F. W. HAMES, DONALD MACKIE, A. P. PAGET, PAUL
PARROT, E. J. PICTON, and A. H. SELLERS, *Chairman*.

REPORT OF THE SUBCOMMITTEE ON THE CONFIDENTIAL DEATH CERTIFICATE

(COMMITTEE ON THE CERTIFICATION OF CAUSES OF DEATH)

FOR several years on this continent there has been a growing conviction of the need for measures designed to improve the certification of deaths. The so-called confidential death certificate is one of these. Several countries in Europe for many years have employed a closed or confidential medical certificate. The methods employed differ in each instance but the objective of all is the same. It is reasonable to expect that confidential certification would tend definitely to improve the accuracy and reliability of official death certificates.

It may be of interest to review briefly the development of interest in the confidential certification of deaths in Canada and the appointment of this committee of the Association. Before the Section of Vital Statistics and Epidemiology of this association in Ottawa in June 1938, I presented a report of a study conducted in the Province of Quebec during the years 1935 and 1936, which was designed to determine the degree of accuracy of the reported causes of death. In this study 5,965 death certificates were investigated relating to the counties within a one-hundred-mile radius of Quebec City, including the city. In this territory there were approximately 1,057 physicians excluding those who were attached to hospitals. Visits were made to 504 of this number. On the occasion of the visit a series of certificates issued by the physician was discussed and the physician was asked to give his actual opinion of the cause of death, referring to his own records or from memory. Comparison was made with the reported statement. In some cases the information was sought by correspondence. In addition 1,903 certificates returned from the city of Montreal were studied. A number of facts were revealed by this study.

In 1,324 certificates (22.2 per cent. of the total certificates investigated) incorrect information had been supplied either intentionally or unintentionally,

resulting in the necessity of changing the coding of the deaths. Excluding 161 (2.7 per cent. of the total) in which the physician had unintentionally given incorrect or incomplete information, there remained 1,163 certificates (19.5 per cent.) in which incomplete or incorrect information apparently was given intentionally; that is, one in every five reports apparently was misleading intentionally. In incomplete certificates the principal cause was concealed most frequently.

A study of these death certificates was made and it was evident that physicians in a number of instances desired to meet the request of the relatives of the deceased in not stating the true cause of the death. In other instances the true cause was not stated because in the system of collection of vital statistics in the Province of Quebec, as in other provinces, the information on the certificate becomes more or less public information; this is true especially in the smaller centres.

In the paper presented at the Ottawa meeting reference was made to the fact that by request and resolution approximately 1,700 physicians had urged that the death certificate be made confidential. This figure now stands at 2,882 physicians, representing 92.3 per cent. of our medical body.

It was not implied that the unsatisfactory conditions revealed by this study applied to other provinces. Attention was drawn in the paper to the implications of such confidential reporting.

Although a committee had been appointed several years ago by the Section of Vital Statistics and Epidemiology of this association, the committee had not functioned. The Executive Committee therefore approved of the appointment of a new national committee with representatives of each of the provinces in the person of the registrar-general or deputy registrar-general, and representatives of the Dominion Bureau of Statistics, the universities, and the Canadian life insurance companies.

In December 1938, during the meetings of the Dominion Council of Health, the scientific advisory body to the Department of Pensions and National Health, a special meeting of the Section of Vital Statistics was called to consider further the subject of confidential death certification. At that time an outline was presented of the plan for a comprehensive trial of the confidential death certificate in certain counties in Quebec. A form—an adaptation of the present death certificate—was presented which permitted of its use as a confidential certificate.

The statistical return of death consists of the regulation form to which has been attached a flap. This flap may be folded and sealed over the medical certificate on face of the statistical return. On the obverse side of the flap are three squares, one of which must be initialed by the physician indicating the cause of death in a general way, so that the municipal authorities may issue the burial certificate according to the proper regulations.

This form has proved to be satisfactory in the brief trial that has been conducted, except for a few minor changes to which reference will be made later in this report.

The trial was conducted in four counties, Portneuf, Lévis, Lotbinière, and Quebec in the vicinity of and including Quebec city. This report deals with the

returns for February and March, as well as the returns from Quebec City for April, totalling 847 confidential certificates.

Of these 847 certificates, 587 (69.3 per cent.) reached the office in a satisfactory condition; that is, the flap was completely sealed. The remainder were either only partially sealed or were open. It has been observed that the later reports are more satisfactory than when this survey was begun.

Of the 847 certificates, 762 (90 per cent.) had the physician's initials in one of the spaces on the flap, indicating the general type of disease. Of these 763 reports, 758 (99.5 per cent.) were properly classified.

Although this study has been conducted for such a short time, we have found that the confidential certificate is influential in obtaining more complete reports from the medical profession. In only five cases was it necessary to write or telephone the physician to obtain further information. This is 0.6 per cent. of the reports received, as compared with 3.5 per cent. in our experience with the open certificate. The number of certificates, however, is too small to draw any conclusions regarding the reporting of deaths due to diseases which otherwise may have been concealed intentionally.

Our experience with this confidential form has demonstrated a few defects which will have to be corrected. The form should be printed on thicker paper for its transparency defeats the purpose of the certificate. The layout of the form will have to be altered so that the physician need sign the form only once, and the date of death should appear on the open face of the form so that the municipal authorities may learn of the date of death. Otherwise the wording of the certificate has occasioned no difficulties.

In the United States the subject is receiving serious consideration. I am informed that a trial is being made in the boroughs of Manhattan and the Bronx, New York City, of a confidential death certificate which permits of the forwarding, in a sealed envelope for transmissal to the health department, of the physician's statement of cause of death. Serious opposition to the introduction of this trial was met but the experiment has now been launched. One of the criticisms that has been made regarding our confidential death certificate is that the medical officer of health has no access to the confidential part of the certificate for local statistical purposes. In my mind I see no objection to the medical officer's having the authority to open the flap of each death certificate and making whatever use he needs of its contents. In other words, their routine work goes on as with the ordinary form, and I do not foresee any objection from the medical profession to this practice. This has been our custom during the present study.

It is hoped that our committee in Canada will give earnest consideration to the conduct of studies similar to those which are being carried on in Quebec in order to determine the accuracy of certification of deaths. Until such studies are made, it is not possible for progress to be made in this matter. The working of the confidential certificate in the counties in which it has been introduced in Quebec indicates that many of the difficulties which were anticipated by those who opposed such a plan of certification have not materialized and that the certificate is meeting the hearty approval of the medical profession in these counties.

PAUL PARROT, *Chairman.*

PIO H. LAPORTE, M.D.

IN the tragic death of the Hon. Pio H. Laporte, M.D., Minister of Health and Labour, the Province of New Brunswick has been deprived of the leadership of one of its best known medical practitioners who only a year ago had become Minister of Health. As he was returning to his home in Edmundston after attending a meeting of the Provincial Government in Fredericton on June 28th, his car plunged into a deep washout on the highway and he received injuries which resulted in his death in hospital on the following day.

Dr. Laporte was born in Vercheres, Quebec, in 1878. He was educated at L'Assomption College, Laval University, and L'Ecole de Médecine of Paris. He was active in public life and had served for several years as mayor of Edmundston.

The passing of few members has been marked by such tributes of appreciation, not only from his colleagues in the Cabinet but from citizens in all walks of life. Premier Dysart, in speaking of Dr. Laporte's life of service, said: "The Province loses a most valuable citizen, the Party a wise counsellor, and the citizens of the Province in general a close and true friend." Dr. Laporte was a man of fine character and outstanding ability, who dedicated his life to the betterment of humanity. During his year of office he had given much of his time to the duties of the Department of Health and had led in the effort to provide wider facilities for the treatment of tuberculosis as well as addressing to the Government the other urgent needs of the Department.

JOHN WILLIAM McINTOSH, B.A., M.B., D.P.H.

ANNOUNCEMENT of the death of Dr. J. W. McIntosh in Vancouver on August 12th was received throughout Canada with deep regret.

Dr. McIntosh's name will always be linked with the development of the Metropolitan Health Committee for Greater Vancouver. From his appointment as Medical Health Officer of Vancouver in 1930 Dr. McIntosh, in co-operation with the Hon. Dr. H. E. Young, Provincial Health Officer, worked towards the objective of a unified health service for the whole Vancouver district, which undertaking was introduced in 1936.

Dr. McIntosh was born in Guelph, Ontario, on August 19, 1870. He received his university education at the University of Toronto, graduating with the degree of B.A. in 1892 and M.B. in 1894. After a long period of service in medical practice, which was marked by post-graduate courses in London, England and at Johns Hopkins University, and by service in the C.A.M.C. overseas, Dr. McIntosh entered the field of public health, taking the course for the Diploma in

Public Health in the School of Hygiene, University of Toronto, in 1929. For six years prior to this he had served as Medical Officer of Health of Burnaby, B.C. Returning to Vancouver in 1930 he was appointed Medical Officer of Health. In this office he continued until his retirement in 1938. During his medical practice he had served in Vancouver in various public positions, first as alderman and later as chairman of the Health Committee. From 1916 to 1920 he was a member of the Provincial Legislature, representing Vancouver, and became the leader of the Soldier's Party in the House. In 1936 he was elected President of the Canadian Public Health Association.

Dr. McIntosh will be remembered as an outstanding exponent of preventive medicine in all its aspects. His untiring energy and unfailing enthusiasm made it possible for him to accomplish within a few years what had been his hope, a Metropolitan Health Board for Greater Vancouver. In his passing public health in Canada has suffered a very great loss.

